



# LESSO

## SOLAR PV MODULES

**Lesso New Energy Global Trading Private Limited**

One Raffles Quay, North Tower, #19-03, Singapore 048583

LESSO Group (2128) is listed in the Stock Exchange of Hong Kong.

 [www.lessosolar.com](http://www.lessosolar.com)  [info@lessosolar.com](mailto:info@lessosolar.com)     LESSO Solar

# LESSO

## BUILDING A SOLAR-POWERED WORLD



## CONTENT

- OVERVIEW** ..... 02
- MANUFACTURING GIANT** ..... 03
- PRODUCTS** ..... 06
  - N-TopCon series ..... 06
  - Pure Black series ..... 20
  - P-type series ..... 28
  - Solar Cable ..... 43
  - Mounting system ..... 46
- PROJECT HIGHLIGHTS** ..... 48
  - Utility Scale Solar Power Station ..... 50
  - Industrial and Commercial  
Rooftop Solar Power Station ..... 51
  - Residential Solar Power Station ..... 54
  - Agriculture-Complementary  
Solar Power Station ..... 56
  - Aquaculture-Complementary  
Solar Power Station ..... 57

## A Bright and Exciting Journey

LESSO Group is a Hong Kong-listed (2128.HK) manufacturer of building materials with an annual revenue of over CNY30.868 billion from its global operations.

LESSO Solar, a flagship division of LESSO Group, specialises in manufacturing solar panels, inverters, and energy storage systems, and providing solar-energy solutions.

Our 5 production bases, introduce advanced equipment, and create intelligent and automated production lines for intelligent building photovoltaic integrated BIPV, solar photovoltaic modules, and solar cells. The sales network of LESSO solar has covered Asia, North America, South America, Europe, South Africa, and the Middle East.

Founded in 2021, LESSO Solar has been growing with spectacular pace, with global production capacity of over 15.3GW for solar panels and 6GW for solar cells by the end of 2023.



**CNY30.868 bil**  
2023 Group Revenue



**5 Major**  
Manufacturing Bases



**37**  
Years of Experiences



**15.3GW**  
Solar Modules Manufacturing Capacity



## Leading the Future with Intelligent Manufacturing

Poised to grow into a large-scale global manufacturer of solar solutions, we are rapidly expanding our production capabilities by utilizing the latest manufacturing technologies and building more factories around the world.

Using only the best raw materials and leveraging on our in-house logistics capabilities, we ensure each step of the process is well controlled to deliver the best experience for our customers.

### Our Certificates

IEC61215, IEC61730,  
ISO 9001:2015 Quality management system,  
ISO 14001:2015 Environment management system,  
ISO 45001:2018 Occupational health and safety management system



# LESSO Solar GLOBAL FOOTPRINT







LESSO Solar has been expediting the adoption of smart manufacturing by proactively building smart factories across the world. Drawing upon the extensive resources of LESSO, we integrate intelligent green energy as the cornerstone of our operations. Our commitment is to provide a wide range of new energy solutions and services to customers worldwide. With a focus on expanding our global production, logistics, sales, and service network, we aim to meet the diverse needs of customers all over the world.

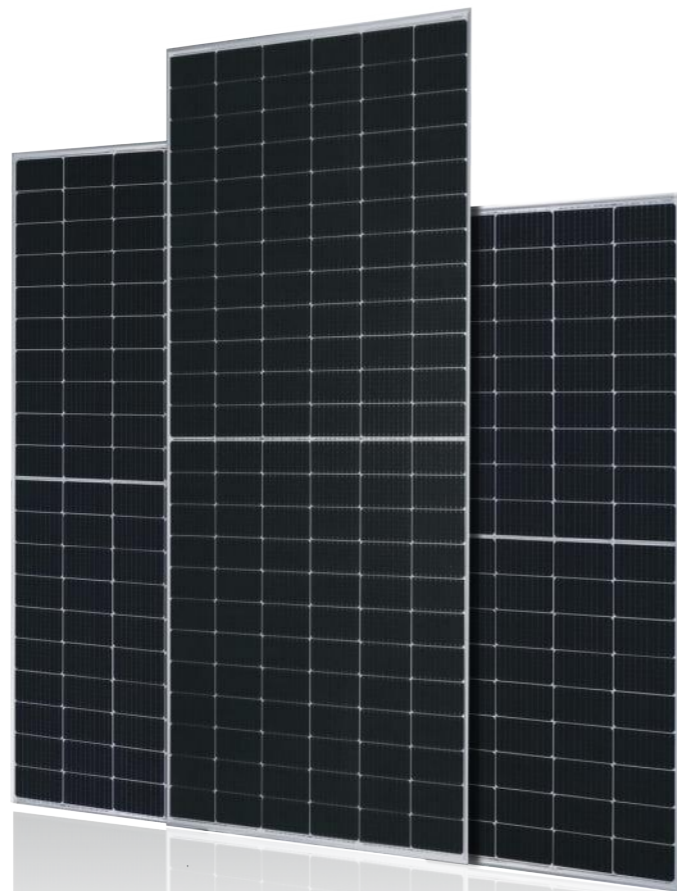


# N-TopCon series

Cutting-edge Technology, Leading Innovation

## Features and Benefits

- 
**10-30% Additional Power Generation**  
 N-TopCon brings 10-30% additional power generation compared to conventional P-type module.
- 
**Better Weak Illumination Response**  
 Higher power output even under low-light conditions like on cloudy or foggy days.
- 
**ZERO LID (Light Induced Degradation)**  
 N-TopCon solar cell has no LID naturally which can increase power generation.
- 
**Better Temperature Coefficient**  
 Higher power generation under working conditions, thanks to passivating contact cell technology.
- 
**Lower LCOE**  
 Higher bifaciality, higher power output and lower BOS cost.
- 
**Wider Applicability**  
 More application scenes like BIPV, vertical installation, snowfield, high-humid, windy and dusty area.



## 182 N-TopCon Monofacial Module

Power Range  

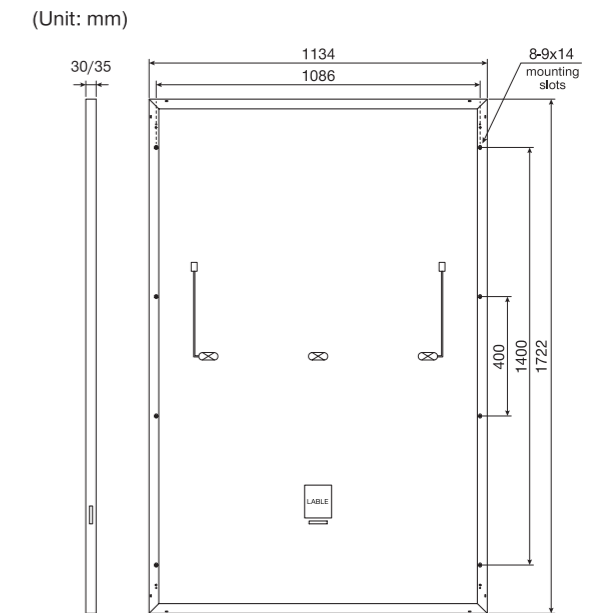
**415W ~ 430W**

Power Output Tolerance  

**0W ~ +5W**

Maximum Efficiency  

**22.02%**



### Electrical Performance Parameters | STC

Model Type	415C(HPM) 54(182)	420C(HPM) 54(182)	425C(HPM) 54(182)	430C(HPM) 54(182)
Nominal Max. Power P <sub>max</sub> (W)	415	420	425	430
Max. Power Voltage V <sub>mp</sub> (V)	31.44	31.63	31.82	32.00
Max. Power Current I <sub>mp</sub> (A)	13.20	13.28	13.36	13.44
Open Circuit Voltage V <sub>oc</sub> (V)	37.97	38.16	38.35	38.54
Short Circuit Current I <sub>sc</sub> (A)	13.97	14.05	14.13	14.21
Module Efficiency (%)	21.25	21.51	21.76	22.02
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
 \* Power measurement tolerance ±3%.

### Electrical Performance Parameters | NMOT

Model Type	415C(HPM) 54(182)	420C(HPM) 54(182)	425C(HPM) 54(182)	430C(HPM) 54(182)
Nominal Max. Power P <sub>max</sub> (W)	312	316	320	323
Max. Power Voltage V <sub>mp</sub> (V)	29.36	29.51	29.69	29.75
Max. Power Current I <sub>mp</sub> (A)	10.63	10.71	10.78	10.86
Open Circuit Voltage V <sub>oc</sub> (V)	36.07	36.25	36.43	36.61
Short Circuit Current I <sub>sc</sub> (A)	11.28	11.35	11.42	11.49

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
 \* Power measurement tolerance ±3%.

### Structure Performance

Solar Cell Type	182mm N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×35mm/30mm
Weight	21.7kg(35mm)/20.6kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), landscape 1400mm(+) 200mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	806pcs(35mm)/936pcs(30mm)

### Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

### Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

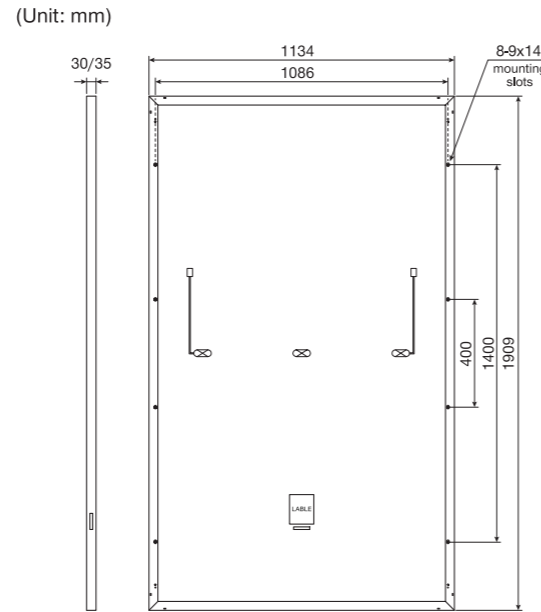
Subsequent annual power degradation no more than **0.40%**

# 182 N-TopCon Monofacial Module

Power Range  
**465W ~ 480W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**22.17%**



## Electrical Performance Parameters | STC

Model Type	465C(HPM) 60(182)	470C(HPM) 60(182)	475C(HPM) 60(182)	480C(HPM) 60(182)
Nominal Max. Power P <sub>max</sub> (W)	465	470	475	480
Max. Power Voltage V <sub>mp</sub> (V)	35.02	35.18	35.35	35.51
Max. Power Current I <sub>mp</sub> (A)	13.28	13.36	13.44	13.52
Open Circuit Voltage V <sub>oc</sub> (V)	42.18	42.34	42.50	42.67
Short Circuit Current I <sub>sc</sub> (A)	14.03	14.11	14.19	14.27
Module Efficiency (%)	21.48	21.71	21.94	22.17
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	465C(HPM) 60(182)	470C(HPM) 60(182)	475C(HPM) 60(182)	480C(HPM) 60(182)
Nominal Max. Power P <sub>max</sub> (W)	350	354	358	362
Max. Power Voltage V <sub>mp</sub> (V)	32.96	33.15	33.34	33.52
Max. Power Current I <sub>mp</sub> (A)	10.62	10.68	10.74	10.80
Open Circuit Voltage V <sub>oc</sub> (V)	40.13	40.29	40.45	40.61
Short Circuit Current I <sub>sc</sub> (A)	11.35	11.42	11.49	11.56

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×35mm/30mm
Weight	23.2kg(35mm)/22.1kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(+), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	744pcs(35mm)/864pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

## Maximum Parameters

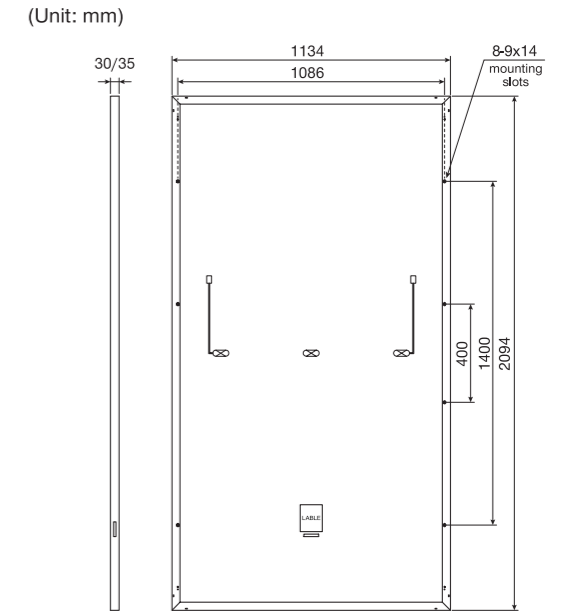
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

# 182 N-TopCon Monofacial Module

Power Range  
**515W ~ 530W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**22.32%**



## Electrical Performance Parameters | STC

Model Type	515C(HPM) 66(182)	520C(HPM) 66(182)	525C(HPM) 66(182)	530C(HPM) 66(182)
Nominal Max. Power P <sub>max</sub> (W)	515	520	525	530
Max. Power Voltage V <sub>mp</sub> (V)	38.55	38.70	38.84	38.98
Max. Power Current I <sub>mp</sub> (A)	13.36	13.44	13.52	13.60
Open Circuit Voltage V <sub>oc</sub> (V)	46.21	46.26	46.31	46.36
Short Circuit Current I <sub>sc</sub> (A)	14.09	14.17	14.25	14.33
Module Efficiency (%)	21.69	21.90	22.11	22.32
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	515C(HPM) 66(182)	520C(HPM) 66(182)	525C(HPM) 66(182)	530C(HPM) 66(182)
Nominal Max. Power P <sub>max</sub> (W)	387	391	395	399
Max. Power Voltage V <sub>mp</sub> (V)	36.41	36.58	36.75	36.92
Max. Power Current I <sub>mp</sub> (A)	10.63	10.69	10.75	10.81
Open Circuit Voltage V <sub>oc</sub> (V)	43.87	44.01	44.15	44.29
Short Circuit Current I <sub>sc</sub> (A)	11.42	11.49	11.56	11.63

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2094×1134×35mm/30mm
Weight	25.1kg(35mm)/23.8kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(+), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	682pcs(35mm)/792pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

Subsequent annual power degradation no more than **0.40%**

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

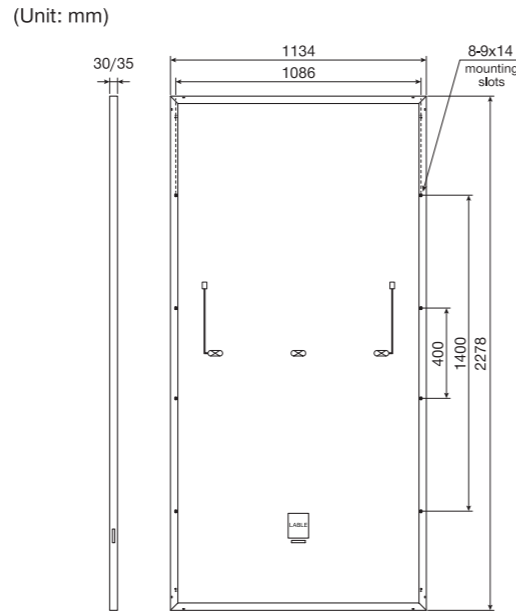
Subsequent annual power degradation no more than **0.40%**

# 182 N-TopCon Monofacial Module

Power Range  
**560W ~ 580W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**22.45%**



Electrical Performance Parameters   STC						
Model Type		560C(HPM) 72(182)	565C(HPM) 72(182)	570C(HPM) 72(182)	575C(HPM) 72(182)	580C(HPM) 72(182)
Nominal Max. Power	P <sub>max</sub> (W)	560	565	570	575	580
Max. Power Voltage	V <sub>mp</sub> (V)	41.92	42.08	42.23	42.38	42.53
Max. Power Current	I <sub>mp</sub> (A)	13.36	13.43	13.50	13.57	13.64
Open Circuit Voltage	V <sub>oc</sub> (V)	50.42	50.56	50.70	50.84	50.98
Short Circuit Current	I <sub>sc</sub> (A)	14.11	14.19	14.27	14.35	14.43
Module Efficiency	(%)	21.68	21.87	22.07	22.26	22.45
Power Output Tolerance	(W)	0~+5W				

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

Electrical Performance Parameters   NMOT						
Model Type		560C(HPM) 72(182)	565C(HPM) 72(182)	570C(HPM) 72(182)	575C(HPM) 72(182)	580C(HPM) 72(182)
Nominal Max. Power	P <sub>max</sub> (W)	421	425	429	433	437
Max. Power Voltage	V <sub>mp</sub> (V)	39.42	39.58	39.73	39.84	39.95
Max. Power Current	I <sub>mp</sub> (A)	10.68	10.74	10.80	10.87	10.94
Open Circuit Voltage	V <sub>oc</sub> (V)	47.88	48.02	48.16	48.29	48.42
Short Circuit Current	I <sub>sc</sub> (A)	11.39	11.45	11.51	11.58	11.64

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

Structure Performance	
Solar Cell Type	182mm N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×35mm/30mm
Weight	28.0kg(35mm)/26.3kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	620pcs(35mm)/720pcs(30mm)

Temperature Characteristics	
Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (Isc)	+0.043%
Temperature Coefficient (Voc)	-0.25%
Temperature Coefficient (Pmax)	-0.30%

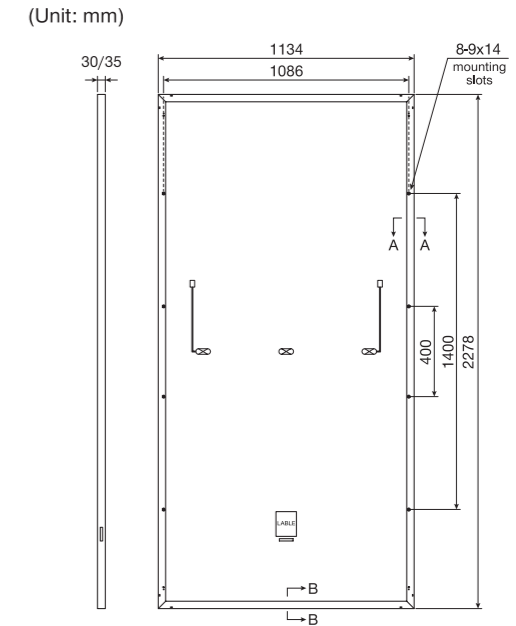
Maximum Parameters	
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

# 182 N-TopCon Monofacial Module

Power Range  
**570W ~ 595W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**23.03%**



Electrical Performance Parameters   STC							
Model Type		570C(HPM) 72S(182)	575C(HPM) 72S(182)	580C(HPM) 72S(182)	585C(HPM) 72S(182)	590C(HPM) 72S(182)	595C(HPM) 72S(182)
Nominal Max. Power	P <sub>max</sub> (W)	570	575	580	585	590	595
Max. Power Voltage	V <sub>mp</sub> (V)	42.23	42.38	42.53	42.67	42.82	42.97
Max. Power Current	I <sub>mp</sub> (A)	13.50	13.57	13.64	13.71	13.78	13.85
Open Circuit Voltage	V <sub>oc</sub> (V)	50.70	50.84	50.98	51.12	51.26	51.40
Short Circuit Current	I <sub>sc</sub> (A)	14.27	14.35	14.43	14.51	14.59	14.67
Module Efficiency	(%)	22.07	22.26	22.45	22.65	22.84	23.03
Power Output Tolerance	(W)	0~+5W					

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

Electrical Performance Parameters   NMOT							
Model Type		570C(HPM) 72S(182)	575C(HPM) 72S(182)	580C(HPM) 72S(182)	585C(HPM) 72S(182)	590C(HPM) 72S(182)	595C(HPM) 72S(182)
Nominal Max. Power	P <sub>max</sub> (W)	429	433	437	441	445	449
Max. Power Voltage	V <sub>mp</sub> (V)	39.87	39.84	39.95	40.06	40.17	40.28
Max. Power Current	I <sub>mp</sub> (A)	10.80	10.87	10.94	11.01	11.08	11.15
Open Circuit Voltage	V <sub>oc</sub> (V)	48.16	48.29	48.42	48.55	48.68	48.81
Short Circuit Current	I <sub>sc</sub> (A)	11.51	11.58	11.64	11.71	11.78	11.84

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

Structure Performance	
Solar Cell Type	183.75R N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×35mm/30mm
Weight	28.0kg(35mm)/26.5kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	620pcs(35mm)/720pcs(30mm)

Temperature Characteristics	
Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (Isc)	+0.043%
Temperature Coefficient (Voc)	-0.25%
Temperature Coefficient (Pmax)	-0.30%

Maximum Parameters	
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

Subsequent annual power degradation no more than **0.40%**

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

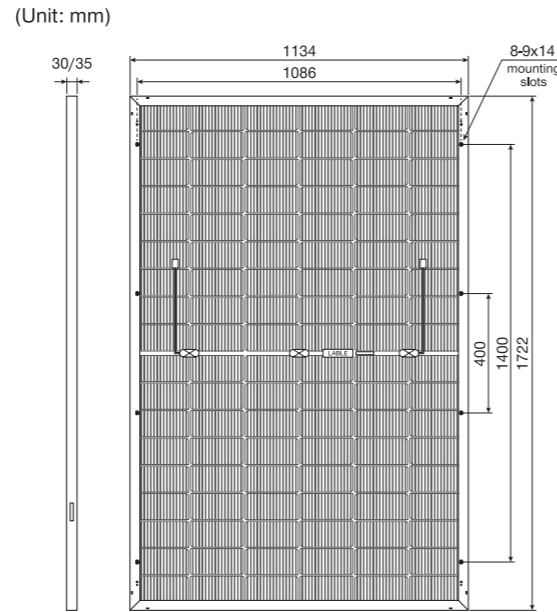
Subsequent annual power degradation no more than **0.40%**

# 182 N-TopCon Bifacial Module

Power Range  
**415W ~ 430W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**22.02%**



Electrical Performance Parameters   STC					
Model Type		415C(HBD) 54(182)	420C(HBD) 54(182)	425C(HBD) 54(182)	430C(HBD) 54(182)
Nominal Max. Power	P <sub>max</sub> (W)	415	420	425	430
Max. Power Voltage	V <sub>mp</sub> (V)	31.18	31.42	31.65	31.88
Max. Power Current	I <sub>mp</sub> (A)	13.31	13.37	13.43	13.49
Open Circuit Voltage	V <sub>oc</sub> (V)	36.77	36.97	37.17	37.37
Short Circuit Current	I <sub>sc</sub> (A)	14.55	14.61	14.67	14.73
Module Efficiency	(%)	21.25	21.51	21.76	22.02
Power Output Tolerance	(W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

Electrical Performance Parameters   NMOT					
Model Type		415C(HBD) 54(182)	420C(HBD) 54(182)	425C(HBD) 54(182)	430C(HBD) 54(182)
Nominal Max. Power	P <sub>max</sub> (W)	311	315	319	323
Max. Power Voltage	V <sub>mp</sub> (V)	29.41	29.61	29.82	30.02
Max. Power Current	I <sub>mp</sub> (A)	10.58	10.64	10.70	10.76
Open Circuit Voltage	V <sub>oc</sub> (V)	34.30	34.49	34.68	34.87
Short Circuit Current	I <sub>sc</sub> (A)	11.80	11.85	11.90	11.95

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

Structure Performance	
Solar Cell Type	182mm N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×35mm/30mm
Weight	24.1kg(35mm)/23.4kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 230mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	806pcs(35mm)/936pcs(30mm)

Temperature Characteristics	
Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

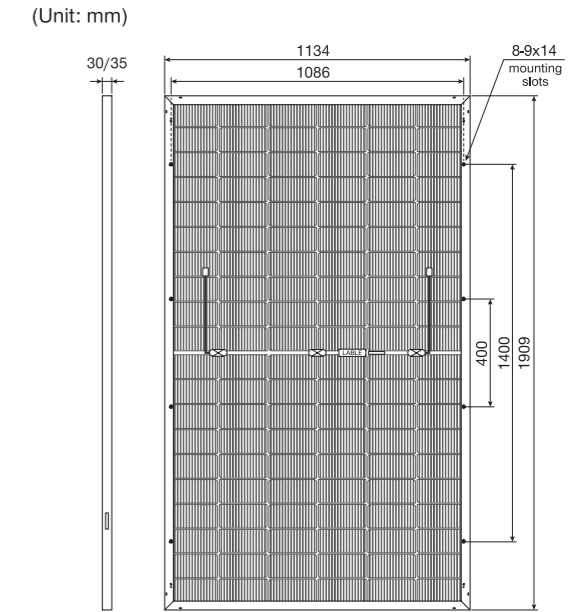
Maximum Parameters	
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

# 182 N-TopCon Bifacial Module

Power Range  
**465W ~ 480W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**22.17%**



Electrical Performance Parameters   STC					
Model Type		465C(HBD) 60(182)	470C(HBD) 60(182)	475C(HBD) 60(182)	480C(HBD) 60(182)
Nominal Max. Power	P <sub>max</sub> (W)	465	470	475	480
Max. Power Voltage	V <sub>mp</sub> (V)	34.84	35.05	35.27	35.48
Max. Power Current	I <sub>mp</sub> (A)	13.35	13.41	13.47	13.53
Open Circuit Voltage	V <sub>oc</sub> (V)	41.47	41.67	41.87	42.07
Short Circuit Current	I <sub>sc</sub> (A)	14.43	14.49	14.55	14.61
Module Efficiency	(%)	21.48	21.71	21.94	22.17
Power Output Tolerance	(W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

Electrical Performance Parameters   NMOT					
Model Type		465C(HBD) 60(182)	470C(HBD) 60(182)	475C(HBD) 60(182)	480C(HBD) 60(182)
Nominal Max. Power	P <sub>max</sub> (W)	349	353	357	361
Max. Power Voltage	V <sub>mp</sub> (V)	32.87	33.06	33.25	33.43
Max. Power Current	I <sub>mp</sub> (A)	10.62	10.68	10.74	10.80
Open Circuit Voltage	V <sub>oc</sub> (V)	38.96	39.15	39.34	39.53
Short Circuit Current	I <sub>sc</sub> (A)	11.74	11.79	11.84	11.89

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

Structure Performance	
Solar Cell Type	182mm N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×35mm/30mm
Weight	26.9kg(35mm)/25.7kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 230mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	744pcs(35mm)/864pcs(30mm)

Temperature Characteristics	
Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

Maximum Parameters	
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

Subsequent annual power degradation no more than **0.40%**

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

Subsequent annual power degradation no more than **0.40%**

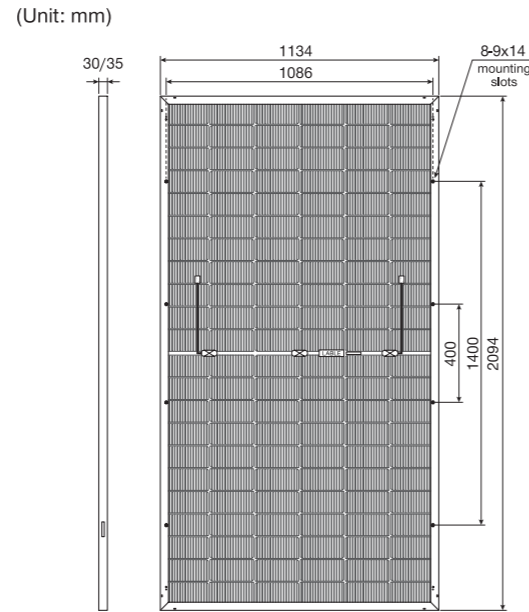


# 182 N-TopCon Bifacial Module

Power Range  
**515W ~ 530W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**22.32%**



Electrical Performance Parameters   STC					
Model Type		515C(HBD) 66(182)	520C(HBD) 66(182)	525C(HBD) 66(182)	530C(HBD) 66(182)
Nominal Max. Power	P <sub>max</sub> (W)	515	520	525	530
Max. Power Voltage	V <sub>mp</sub> (V)	38.50	38.70	38.89	39.09
Max. Power Current	I <sub>mp</sub> (A)	13.38	13.44	13.50	13.56
Open Circuit Voltage	V <sub>oc</sub> (V)	46.17	46.37	46.57	46.77
Short Circuit Current	I <sub>sc</sub> (A)	14.31	14.37	14.43	14.49
Module Efficiency	(%)	21.69	21.90	22.11	22.32
Power Output Tolerance	(W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

Electrical Performance Parameters   NMOT					
Model Type		515C(HBD) 66(182)	520C(HBD) 66(182)	525C(HBD) 66(182)	530C(HBD) 66(182)
Nominal Max. Power	P <sub>max</sub> (W)	386	390	394	398
Max. Power Voltage	V <sub>mp</sub> (V)	36.22	36.39	36.55	36.72
Max. Power Current	I <sub>mp</sub> (A)	10.66	10.72	10.78	10.84
Open Circuit Voltage	V <sub>oc</sub> (V)	43.62	43.81	44.00	44.19
Short Circuit Current	I <sub>sc</sub> (A)	11.58	11.63	11.68	11.73

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

Structure Performance	
Solar Cell Type	182mm N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6x22)
Module Dimension	2094×1134×35mm/30mm
Weight	29.6kg(35mm)/28.4kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 230mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	682pcs(35mm)/792pcs(30mm)

Temperature Characteristics	
Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

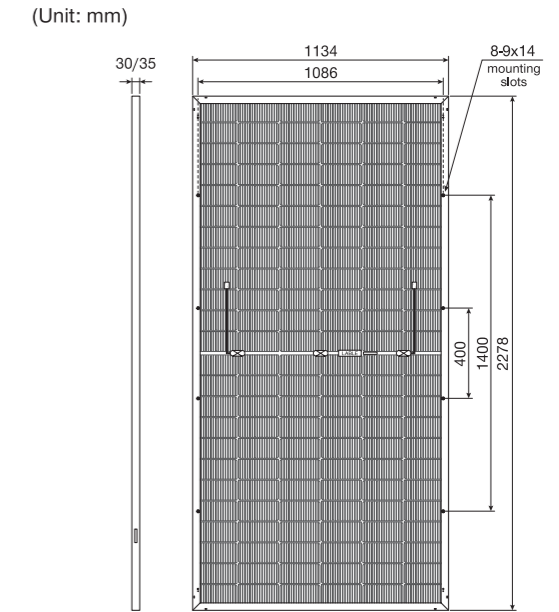
Maximum Parameters	
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

# 182 N-TopCon Bifacial Module

Power Range  
**560W ~ 580W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**22.45%**



Electrical Performance Parameters   STC						
Model Type		560C(HBD) 72(182)	565C(HBD) 72(182)	570C(HBD) 72(182)	575C(HBD) 72(182)	580C(HBD) 72(182)
Nominal Max. Power	P <sub>max</sub> (W)	560	565	570	575	580
Max. Power Voltage	V <sub>mp</sub> (V)	42.11	42.30	42.45	42.60	42.75
Max. Power Current	I <sub>mp</sub> (A)	13.30	13.36	13.43	13.50	13.57
Open Circuit Voltage	V <sub>oc</sub> (V)	50.63	50.83	51.03	51.23	51.43
Short Circuit Current	I <sub>sc</sub> (A)	14.09	14.15	14.21	14.27	14.33
Module Efficiency	(%)	21.68	21.87	22.07	22.26	22.45
Power Output Tolerance	(W)	0~+5W				

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

Electrical Performance Parameters   NMOT						
Model Type		560C(HBD) 72(182)	565C(HBD) 72(182)	570C(HBD) 72(182)	575C(HBD) 72(182)	580C(HBD) 72(182)
Nominal Max. Power	P <sub>max</sub> (W)	421	425	429	433	437
Max. Power Voltage	V <sub>mp</sub> (V)	39.57	39.72	39.87	40.02	40.17
Max. Power Current	I <sub>mp</sub> (A)	10.64	10.70	10.76	10.82	10.88
Open Circuit Voltage	V <sub>oc</sub> (V)	48.09	48.28	48.47	48.66	48.85
Short Circuit Current	I <sub>sc</sub> (A)	11.37	11.42	11.46	11.51	11.56

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

Structure Performance	
Solar Cell Type	182mm N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×35mm/30mm
Weight	32.3kg(35mm)/31.2kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 230mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	620pcs(35mm)/720pcs(30mm)

Temperature Characteristics	
Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

Maximum Parameters	
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

Subsequent annual power degradation no more than **0.40%**

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

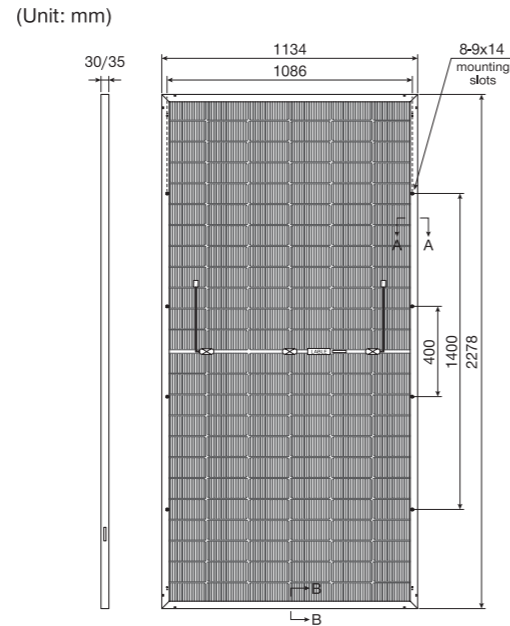
Subsequent annual power degradation no more than **0.40%**

# 182 N-TopCon Bifacial Module

Power Range  
**570W ~ 595W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**23.03%**



## Electrical Performance Parameters | STC

Model Type	570C(HBD) 72S(182)	575C(HBD) 72S(182)	580C(HBD) 72S(182)	585C(HBD) 72S(182)	590C(HBD) 72S(182)	595C(HBD) 72S(182)
Nominal Max. Power P <sub>max</sub> (W)	570	575	580	585	590	595
Max. Power Voltage V <sub>mp</sub> (V)	42.45	42.60	42.75	42.89	43.04	43.18
Max. Power Current I <sub>mp</sub> (A)	13.43	13.50	13.57	13.64	13.71	13.78
Open Circuit Voltage V <sub>oc</sub> (V)	51.03	51.23	51.43	51.63	51.83	52.03
Short Circuit Current I <sub>sc</sub> (A)	14.21	14.27	14.33	14.39	14.45	14.51
Module Efficiency (%)	22.07	22.26	22.45	22.65	22.84	23.03
Power Output Tolerance (W)	0~+5W					

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	570C(HBD) 72S(182)	575C(HBD) 72S(182)	580C(HBD) 72S(182)	585C(HBD) 72S(182)	590C(HBD) 72S(182)	595C(HBD) 72S(182)
Nominal Max. Power P <sub>max</sub> (W)	429	433	437	441	445	449
Max. Power Voltage V <sub>mp</sub> (V)	39.87	40.02	40.17	40.32	40.46	40.60
Max. Power Current I <sub>mp</sub> (A)	10.76	10.82	10.88	10.94	11.00	11.06
Open Circuit Voltage V <sub>oc</sub> (V)	48.47	48.66	48.85	49.04	49.23	49.42
Short Circuit Current I <sub>sc</sub> (A)	11.46	11.51	11.56	11.61	11.66	11.71

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	183.75R N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×35mm/30mm
Weight	32.3kg(35mm)/31.4kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	620pcs(35mm)/720pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

## Maximum Parameters

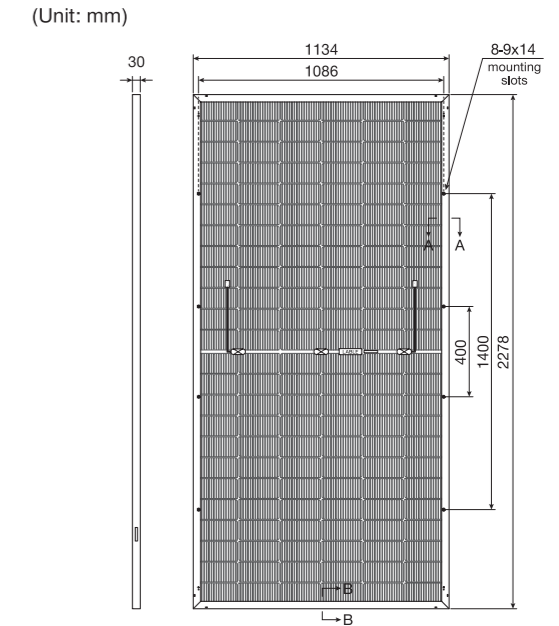
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

# 182 N-TopCon Bifacial Polyurethane Composite Module

Power Range  
**555W ~ 585W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**22.65%**



## Electrical Performance Parameters | STC

Model Type	555C(HBD) 72(182)	560C(HBD) 72(182)	565C(HBD) 72(182)	570C(HBD) 72(182)	575C(HBD) 72(182)	580C(HBD) 72(182)	585C(HBD) 72(182)
Nominal Max. Power P <sub>max</sub> (W)	555	560	565	570	575	580	585
Max. Power Voltage V <sub>mp</sub> (V)	41.92	42.11	42.30	42.45	42.60	42.75	42.89
Max. Power Current I <sub>mp</sub> (A)	13.24	13.30	13.36	13.43	13.50	13.57	13.64
Open Circuit Voltage V <sub>oc</sub> (V)	50.43	50.63	50.83	51.03	51.23	51.43	51.63
Short Circuit Current I <sub>sc</sub> (A)	14.03	14.09	14.15	14.21	14.27	14.33	14.39
Module Efficiency (%)	21.48	21.68	21.87	22.07	22.26	22.45	22.65
Power Output Tolerance (W)	0~+5W						

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	555C(HBD) 72(182)	560C(HBD) 72(182)	565C(HBD) 72(182)	570C(HBD) 72(182)	575C(HBD) 72(182)	580C(HBD) 72(182)	585C(HBD) 72(182)
Nominal Max. Power P <sub>max</sub> (W)	417	421	425	429	433	437	441
Max. Power Voltage V <sub>mp</sub> (V)	39.42	39.57	39.72	39.87	40.02	40.17	40.32
Max. Power Current I <sub>mp</sub> (A)	10.58	10.64	10.70	10.76	10.82	10.88	10.94
Open Circuit Voltage V <sub>oc</sub> (V)	47.90	48.09	48.28	48.47	48.66	48.85	49.04
Short Circuit Current I <sub>sc</sub> (A)	11.32	11.37	11.42	11.46	11.51	11.56	11.61

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×30mm
Weight	30.6kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Polyurethane Composite Frame
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	36pcs
Per Container(40'HQ)	720pcs

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

Subsequent annual power degradation no more than **0.40%**

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

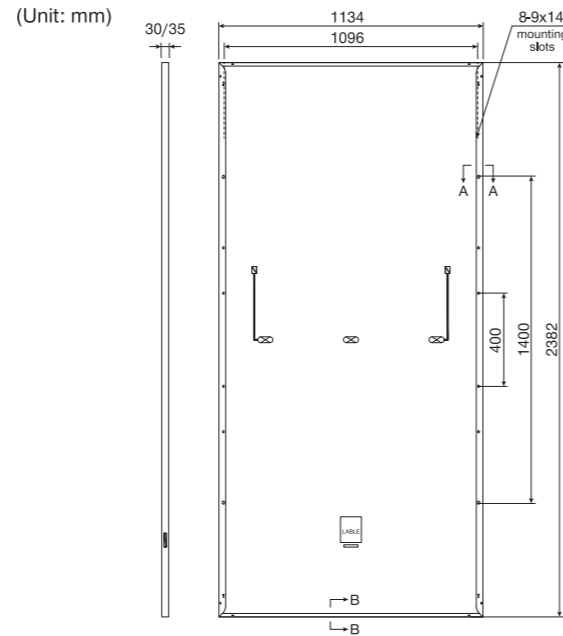
Subsequent annual power degradation no more than **0.40%**

# 210R N-TopCon Monofacial Module

Power Range  
**590W ~ 625W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**23.14%**



## Electrical Performance Parameters | STC

Model Type	590C(HPM) 66(210R)	595C(HPM) 66(210R)	600C(HPM) 66(210R)	605C(HPM) 66(210R)	610C(HPM) 66(210R)	615C(HPM) 66(210R)	620C(HPM) 66(210R)	625C(HPM) 66(210R)
Nominal Max. Power P <sub>max</sub> (W)	590	595	600	605	610	615	620	625
Max. Power Voltage V <sub>mp</sub> (V)	39.92	40.05	40.17	40.30	40.43	40.55	40.69	40.83
Max. Power Current I <sub>mp</sub> (A)	14.78	14.86	14.94	15.02	15.09	15.17	15.24	15.31
Open Circuit Voltage V <sub>oc</sub> (V)	47.90	48.04	48.17	48.30	48.44	48.57	48.70	48.83
Short Circuit Current I <sub>sc</sub> (A)	15.62	15.71	15.79	15.88	15.97	16.06	16.14	16.23
Module Efficiency (%)	21.84	22.03	22.21	22.40	22.58	22.77	22.95	23.14
Power Output Tolerance (W)	0~+5W							

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	590C(HPM) 66(210R)	595C(HPM) 66(210R)	600C(HPM) 66(210R)	605C(HPM) 66(210R)	610C(HPM) 66(210R)	615C(HPM) 66(210R)	620C(HPM) 66(210R)	625C(HPM) 66(210R)
Nominal Max. Power P <sub>max</sub> (W)	444	448	452	456	460	464	468	472
Max. Power Voltage V <sub>mp</sub> (V)	37.28	37.43	37.58	37.75	37.90	38.07	38.24	38.39
Max. Power Current I <sub>mp</sub> (A)	11.91	11.97	12.03	12.08	12.14	12.19	12.24	12.30
Open Circuit Voltage V <sub>oc</sub> (V)	45.45	45.58	45.71	45.83	45.96	46.09	46.22	46.35
Short Circuit Current I <sub>sc</sub> (A)	12.60	12.67	12.75	12.82	12.89	12.97	13.04	13.12

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	210R N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2382×1134×35mm/30mm
Weight	32.8kg(35mm)/30.8kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 200mm(+), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	558pcs(35mm) / 648pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

## Maximum Parameters

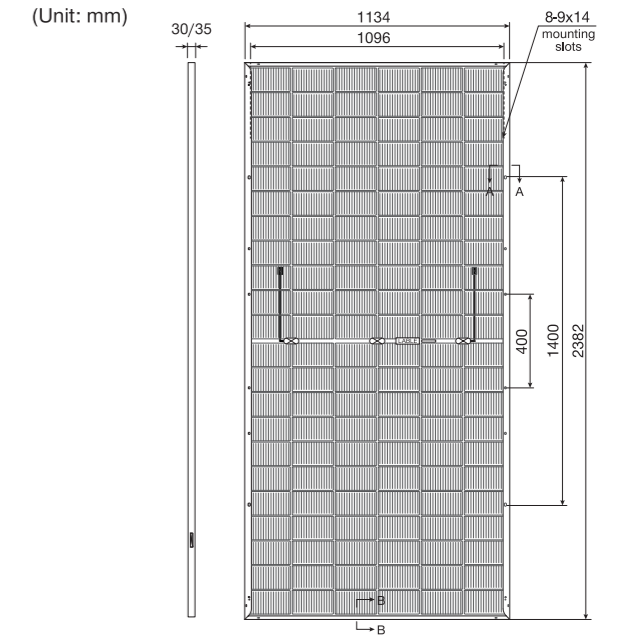
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

# 210R N-TopCon Bifacial Module

Power Range  
**590W ~ 625W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**23.14%**



## Electrical Performance Parameters | STC

Model Type	590C(HBD) 66(210R)	595C(HBD) 66(210R)	600C(HBD) 66(210R)	605C(HBD) 66(210R)	610C(HBD) 66(210R)	615C(HBD) 66(210R)	620C(HBD) 66(210R)	625C(HBD) 66(210R)
Nominal Max. Power P <sub>max</sub> (W)	590	595	600	605	610	615	620	625
Max. Power Voltage V <sub>mp</sub> (V)	40.14	40.26	40.38	40.51	40.64	40.76	40.88	40.99
Max. Power Current I <sub>mp</sub> (A)	14.70	14.78	14.86	14.94	15.01	15.09	15.17	15.25
Open Circuit Voltage V <sub>oc</sub> (V)	48.15	48.29	48.42	48.55	48.69	48.82	48.95	49.08
Short Circuit Current I <sub>sc</sub> (A)	15.54	15.63	15.71	15.80	15.89	15.98	16.06	16.15
Module Efficiency (%)	21.84	22.03	22.21	22.40	22.58	22.77	22.95	23.14
Power Output Tolerance (W)	0~+5W							

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	590C(HBD) 66(210R)	595C(HBD) 66(210R)	600C(HBD) 66(210R)	605C(HBD) 66(210R)	610C(HBD) 66(210R)	615C(HBD) 66(210R)	620C(HBD) 66(210R)	625C(HBD) 66(210R)
Nominal Max. Power P <sub>max</sub> (W)	444	448	452	456	460	464	468	472
Max. Power Voltage V <sub>mp</sub> (V)	37.47	37.62	37.77	37.94	38.10	38.26	38.43	38.59
Max. Power Current I <sub>mp</sub> (A)	11.85	11.91	11.97	12.02	12.08	12.13	12.18	12.24
Open Circuit Voltage V <sub>oc</sub> (V)	45.69	45.82	45.95	46.07	46.20	46.33	46.46	46.59
Short Circuit Current I <sub>sc</sub> (A)	12.54	12.60	12.68	12.75	12.82	12.89	12.96	13.03

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	210R N-TopCon Mono Cell (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2382×1134×35mm/30mm
Weight	35.2kg(35mm)/33.4kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 200mm(+), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	558pcs(35mm)/648pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.043%
Temperature Coefficient (V <sub>oc</sub> )	-0.25%
Temperature Coefficient (P <sub>max</sub> )	-0.30%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	35A

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **1%**

Subsequent annual power degradation no more than **0.40%**

**12** years product workmanship warranty

**30** years linear power output warranty







1st year power degradation no more than **1%**

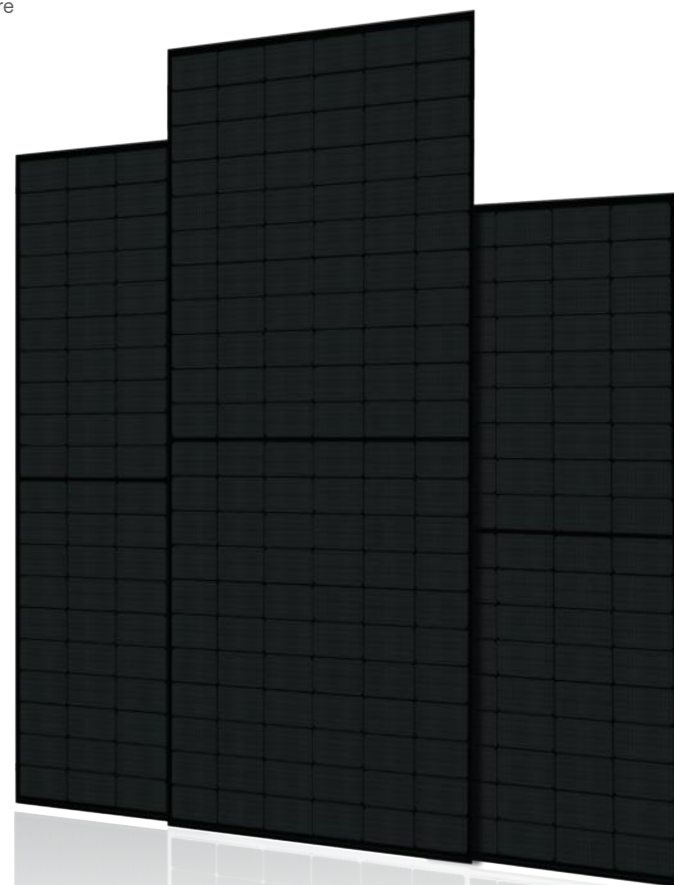
Subsequent annual power degradation no more than **0.40%**

# Pure Black series

Aesthetic Design, Darker, Purer, Seamless Integration

## Features and Benefits

-  The application of multi-busbar (MBB) half-cut cell technology brings stronger resistance to shade and lower risk of hot spot.
-  Strict control on raw materials and process optimization of high efficiency PERC ensure better resistance against PID of PV module.
-  Through harsh weathering tests of sand, dust, salt mist, ammonia, etc., to get stronger weather resistance of outdoor environment.
-  Lower oxygen and carbon content result in lower LID.
-  By series and parallel design, to reduce the series RS and achieve higher power output and lower BOS cost.
-  Lower temperature coefficient and lower operating temperature can ensure higher power generation.



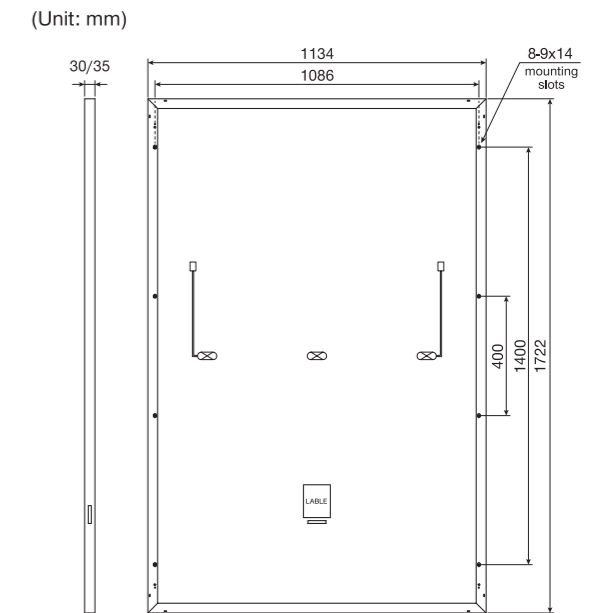
\*Customizable with 15 days lead time

## 182 Pure Black P-type Monofacial Module

Power Range  
**395W ~ 405W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**20.74%**



### Electrical Performance Parameters | STC

Model Type	395D(BPM) 54(182)	400D(BPM) 54(182)	405D(BPM) 54(182)	
Nominal Max. Power	P <sub>max</sub> (W)	395	400	405
Max. Power Voltage	V <sub>mp</sub> (V)	30.82	31.02	31.22
Max. Power Current	I <sub>mp</sub> (A)	12.82	12.90	12.98
Open Circuit Voltage	V <sub>oc</sub> (V)	36.70	36.90	37.10
Short Circuit Current	I <sub>sc</sub> (A)	13.60	13.65	13.70
Module Efficiency	(%)	20.23	20.48	20.74
Power Output Tolerance	(W)		0~+5W	

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

### Electrical Performance Parameters | NMOT

Model Type	395D(BPM) 54(182)	400D(BPM) 54(182)	405D(BPM) 54(182)	
Nominal Max. Power	P <sub>max</sub> (W)	275	280	285
Max. Power Voltage	V <sub>mp</sub> (V)	27.02	27.30	27.62
Max. Power Current	I <sub>mp</sub> (A)	10.18	10.26	10.32
Open Circuit Voltage	V <sub>oc</sub> (V)	34.20	34.40	34.60
Short Circuit Current	I <sub>sc</sub> (A)	11.19	11.39	11.59

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

### Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×35mm/30mm
Weight	21.7kg(35mm)/20.6kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 300mm(+), landscape 1400mm(+) 200mm(-), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	806pcs(35mm)/936pcs(30mm)

### Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (Isc)	+0.048%
Temperature Coefficient (Voc)	-0.26%
Temperature Coefficient (Pmax)	-0.34%

### Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

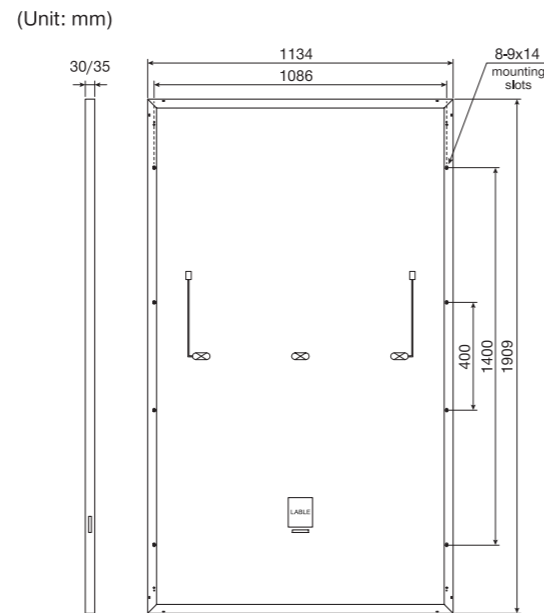
Subsequent annual power degradation no more than **0.55%**

# 182 Pure Black P-type Monofacial Module

Power Range  
**440W ~ 450W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**20.79%**



## Electrical Performance Parameters | STC

Model Type	440D(BPM) 60(182)	445D(BPM) 60(182)	450D(BPM) 60(182)	
Nominal Max. Power	P <sub>max</sub> (W)	440	445	450
Max. Power Voltage	V <sub>mp</sub> (V)	34.22	34.42	34.62
Max. Power Current	I <sub>mp</sub> (A)	12.86	12.93	13.00
Open Circuit Voltage	V <sub>oc</sub> (V)	40.98	41.18	41.38
Short Circuit Current	I <sub>sc</sub> (A)	13.60	13.66	13.72
Module Efficiency	(%)	20.33	20.56	20.79
Power Output Tolerance	(W)		0~+5W	

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	440D(BPM) 60(182)	445D(BPM) 60(182)	450D(BPM) 60(182)	
Nominal Max. Power	P <sub>max</sub> (W)	320	325	330
Max. Power Voltage	V <sub>mp</sub> (V)	31.24	31.44	31.64
Max. Power Current	I <sub>mp</sub> (A)	10.25	10.34	10.43
Open Circuit Voltage	V <sub>oc</sub> (V)	38.48	38.68	38.88
Short Circuit Current	I <sub>sc</sub> (A)	10.77	10.97	11.17

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×35mm/30mm
Weight	23.2kg(35mm)/22.1kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	744pcs(35mm)/864pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

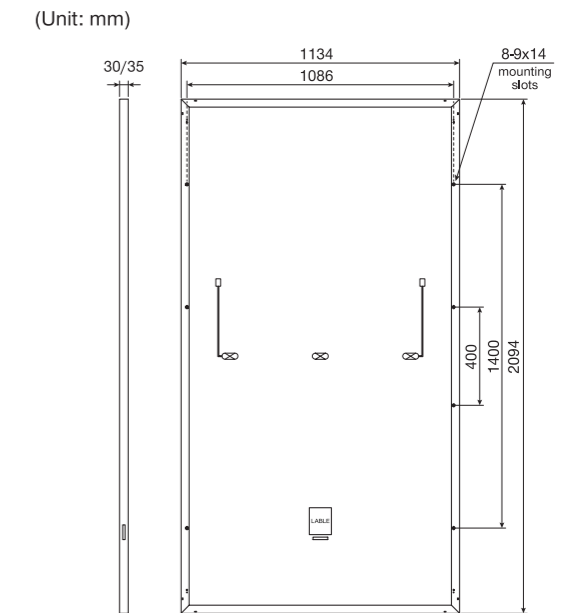
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

# 182 Pure Black P-type Monofacial Module

Power Range  
**485W ~ 495W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**20.85%**



## Electrical Performance Parameters | STC

Model Type	485D(BPM) 66(182)	490D(BPM) 66(182)	495D(BPM) 66(182)	
Nominal Max. Power	P <sub>max</sub> (W)	485	490	495
Max. Power Voltage	V <sub>mp</sub> (V)	37.62	37.82	38.02
Max. Power Current	I <sub>mp</sub> (A)	12.90	12.96	13.02
Open Circuit Voltage	V <sub>oc</sub> (V)	45.58	45.78	45.98
Short Circuit Current	I <sub>sc</sub> (A)	13.57	13.62	13.67
Module Efficiency	(%)	20.42	20.64	20.85
Power Output Tolerance	(W)		0~+5W	

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	485D(BPM) 66(182)	490D(BPM) 66(182)	495D(BPM) 66(182)	
Nominal Max. Power	P <sub>max</sub> (W)	365	370	375
Max. Power Voltage	V <sub>mp</sub> (V)	34.64	34.84	35.04
Max. Power Current	I <sub>mp</sub> (A)	10.54	10.62	10.71
Open Circuit Voltage	V <sub>oc</sub> (V)	42.93	42.98	43.03
Short Circuit Current	I <sub>sc</sub> (A)	10.72	10.92	11.12

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2094×1134×35mm/30mm
Weight	25.1kg(35mm)/23.8kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	682pcs(35mm)/792pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.55%**

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

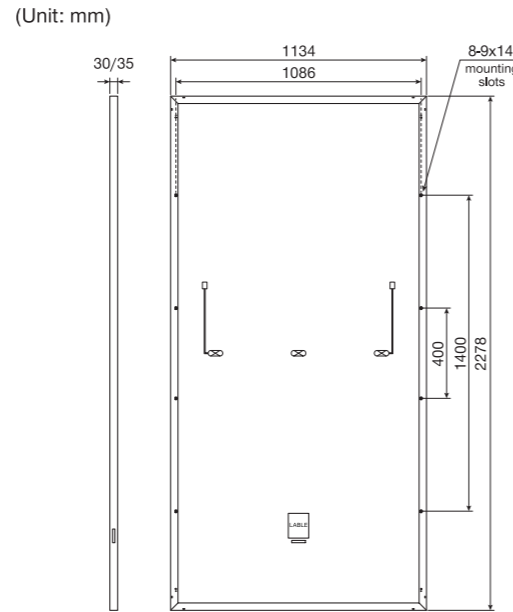
Subsequent annual power degradation no more than **0.55%**

# 182 Pure Black P-type Monofacial Module

Power Range  
**525W ~ 545W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.1%**



## Electrical Performance Parameters | STC

Model Type		525D(BPM) 72(182)	530D(BPM) 72(182)	535D(BPM) 72(182)	540D(BPM) 72(182)	545D(BPM) 72(182)
Nominal Max. Power	P <sub>max</sub> (W)	525	530	535	540	545
Max. Power Voltage	V <sub>mp</sub> (V)	40.82	41.04	41.24	41.44	41.64
Max. Power Current	I <sub>mp</sub> (A)	12.87	12.92	12.98	13.04	13.09
Open Circuit Voltage	V <sub>oc</sub> (V)	49.98	50.18	50.38	50.58	50.78
Short Circuit Current	I <sub>sc</sub> (A)	13.54	13.59	13.64	13.69	13.74
Module Efficiency	(%)	20.32	20.52	20.71	20.90	21.10
Power Output Tolerance	(W)	0~+5W				

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type		525D(BPM) 72(182)	530D(BPM) 72(182)	535D(BPM) 72(182)	540D(BPM) 72(182)	545D(BPM) 72(182)
Nominal Max. Power	P <sub>max</sub> (W)	390	395	400	405	410
Max. Power Voltage	V <sub>mp</sub> (V)	37.84	38.04	38.24	38.44	38.64
Max. Power Current	I <sub>mp</sub> (A)	10.31	10.39	10.47	10.54	10.62
Open Circuit Voltage	V <sub>oc</sub> (V)	47.48	47.68	47.88	48.08	48.28
Short Circuit Current	I <sub>sc</sub> (A)	10.92	10.97	11.02	11.07	11.12

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×35mm/30mm
Weight	28.0kg(35mm)/26.3kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	620pcs(35mm)/720pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (Isc)	+0.048%
Temperature Coefficient (Voc)	-0.26%
Temperature Coefficient (Pmax)	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

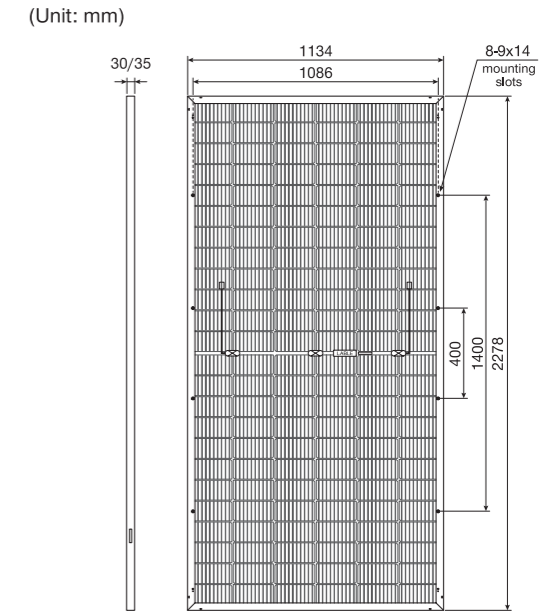
# 182 Pure Black P-type Bifacial Module

Power Range  
**530W ~ 555W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.48%**

Double sides power output to reach higher comprehensive efficiency and get more profit.



## Electrical Performance Parameters | STC

Model Type		530D(HBD) 72(182)	535D(HBD) 72(182)	540D(HBD) 72(182)	545D(HBD) 72(182)	550D(HBD) 72(182)	555D(HBD) 72(182)
Nominal Max. Power	P <sub>max</sub> (W)	530	535	540	545	550	555
Max. Power Voltage	V <sub>mp</sub> (V)	41.29	41.45	41.61	41.77	41.93	42.08
Max. Power Current	I <sub>mp</sub> (A)	12.84	12.91	12.98	13.05	13.12	13.19
Open Circuit Voltage	V <sub>oc</sub> (V)	49.30	49.40	49.52	49.64	49.78	49.93
Short Circuit Current	I <sub>sc</sub> (A)	13.73	13.80	13.87	13.94	14.01	14.07
Module Efficiency	(%)	20.52	20.71	20.90	21.10	21.29	21.48
Power Output Tolerance	(W)	0~+5W					

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type		530D(HBD) 72(182)	535D(HBD) 72(182)	540D(HBD) 72(182)	545D(HBD) 72(182)	550D(HBD) 72(182)	555D(HBD) 72(182)
Nominal Max. Power	P <sub>max</sub> (W)	402	405	408	411	414	417
Max. Power Voltage	V <sub>mp</sub> (V)	38.65	38.78	38.88	39.00	39.13	39.26
Max. Power Current	I <sub>mp</sub> (A)	10.38	10.42	10.47	10.52	10.57	10.63
Open Circuit Voltage	V <sub>oc</sub> (V)	47.00	47.18	47.37	47.56	47.75	47.94
Short Circuit Current	I <sub>sc</sub> (A)	11.10	11.15	11.21	11.26	11.31	11.36

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×35mm/30mm
Weight	32.3kg(35mm)/31.2kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	620pcs(35mm)/720pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (Isc)	+0.048%
Temperature Coefficient (Voc)	-0.26%
Temperature Coefficient (Pmax)	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.55%**

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **2%**

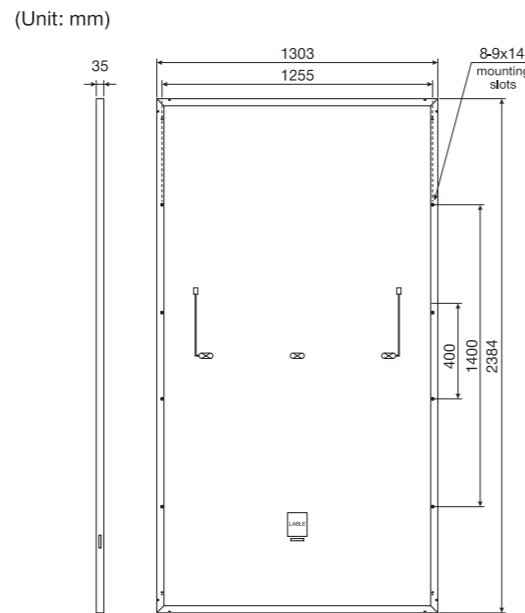
Subsequent annual power degradation no more than **0.45%**

# 210 Pure Black P-type Monofacial Module

Power Range  
**635W ~ 660W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.25%**



Electrical Performance Parameters   STC							
Model Type		635D(BPM) 66(210)	640D(BPM) 66(210)	645D(BPM) 66(210)	650D(BPM) 66(210)	655D(BPM) 66(210)	660D(BPM) 66(210)
Nominal Max. Power	P <sub>max</sub> (W)	635	640	645	650	655	660
Max. Power Voltage	V <sub>mp</sub> (V)	36.85	37.05	37.25	37.45	37.65	37.85
Max. Power Current	I <sub>mp</sub> (A)	17.24	17.28	17.32	17.36	17.40	17.44
Open Circuit Voltage	V <sub>oc</sub> (V)	45.12	45.32	45.52	45.72	45.92	46.12
Short Circuit Current	I <sub>sc</sub> (A)	18.18	18.22	18.26	18.30	18.34	18.40
Module Efficiency	(%)	20.44	20.60	20.76	20.92	21.09	21.25
Power Output Tolerance	(W)	0~+5W					

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

Electrical Performance Parameters   NMOT							
Model Type		635D(BPM) 66(210)	640D(BPM) 66(210)	645D(BPM) 66(210)	650D(BPM) 66(210)	655D(BPM) 66(210)	660D(BPM) 66(210)
Nominal Max. Power	P <sub>max</sub> (W)	477	481	485	489	493	497
Max. Power Voltage	V <sub>mp</sub> (V)	34.20	34.40	34.60	34.80	35.00	35.20
Max. Power Current	I <sub>mp</sub> (A)	13.97	14.00	14.03	14.06	14.09	14.12
Open Circuit Voltage	V <sub>oc</sub> (V)	42.20	42.40	42.60	42.80	43.00	43.20
Short Circuit Current	I <sub>sc</sub> (A)	14.10	14.76	14.80	14.84	14.88	15.00

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

Structure Performance	
Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2384×1303×35mm
Weight	33.8kg
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	Black
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	558pcs

Temperature Characteristics	
Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

Maximum Parameters	
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

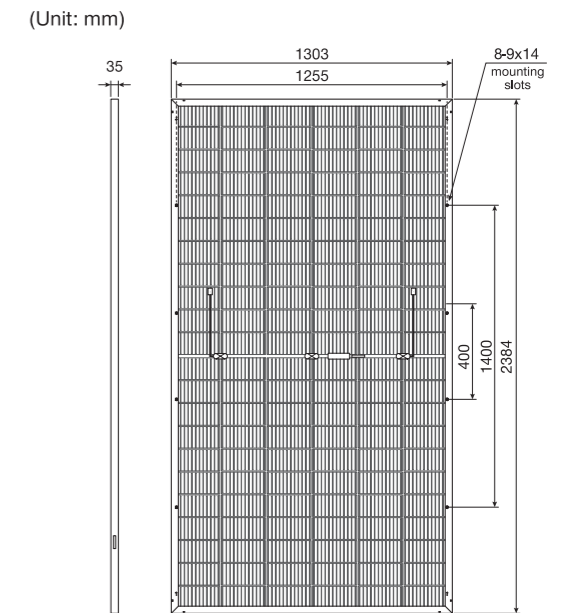
# 210 Pure Black P-type Bifacial Module

Power Range  
**645W ~ 665W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.41%**

Double sides power output to reach higher comprehensive efficiency and get more profit.



Electrical Performance Parameters   STC						
Model Type		645D(HBD) 66(210)	650D(HBD) 66(210)	655D(HBD) 66(210)	660D(HBD) 66(210)	665D(HBD) 66(210)
Nominal Max. Power	P <sub>max</sub> (W)	645	650	655	660	665
Max. Power Voltage	V <sub>mp</sub> (V)	37.43	37.63	37.83	38.03	38.23
Max. Power Current	I <sub>mp</sub> (A)	17.24	17.28	17.32	17.36	17.40
Open Circuit Voltage	V <sub>oc</sub> (V)	45.40	45.60	45.80	46.00	46.20
Short Circuit Current	I <sub>sc</sub> (A)	18.30	18.34	18.38	18.42	18.46
Module Efficiency	(%)	20.76	20.92	21.09	21.25	21.41
Power Output Tolerance	(W)	0~+5W				

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

Electrical Performance Parameters   NMOT						
Model Type		645D(HBD) 66(210)	650D(HBD) 66(210)	655D(HBD) 66(210)	660D(HBD) 66(210)	665D(HBD) 66(210)
Nominal Max. Power	P <sub>max</sub> (W)	488	492	496	500	504
Max. Power Voltage	V <sub>mp</sub> (V)	34.84	35.04	35.22	35.42	35.62
Max. Power Current	I <sub>mp</sub> (A)	14.02	14.06	14.08	14.12	14.16
Open Circuit Voltage	V <sub>oc</sub> (V)	42.80	43.00	43.20	43.40	43.60
Short Circuit Current	I <sub>sc</sub> (A)	14.74	14.78	14.82	14.86	14.90

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

Structure Performance	
Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2384×1303×35mm
Weight	38.2kg
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy (Black)
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs
Per Container(40'HQ)	558pcs

Temperature Characteristics	
Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

Maximum Parameters	
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.55%**

**12** years product workmanship warranty

**30** years linear power output warranty







1st year power degradation no more than **2%**

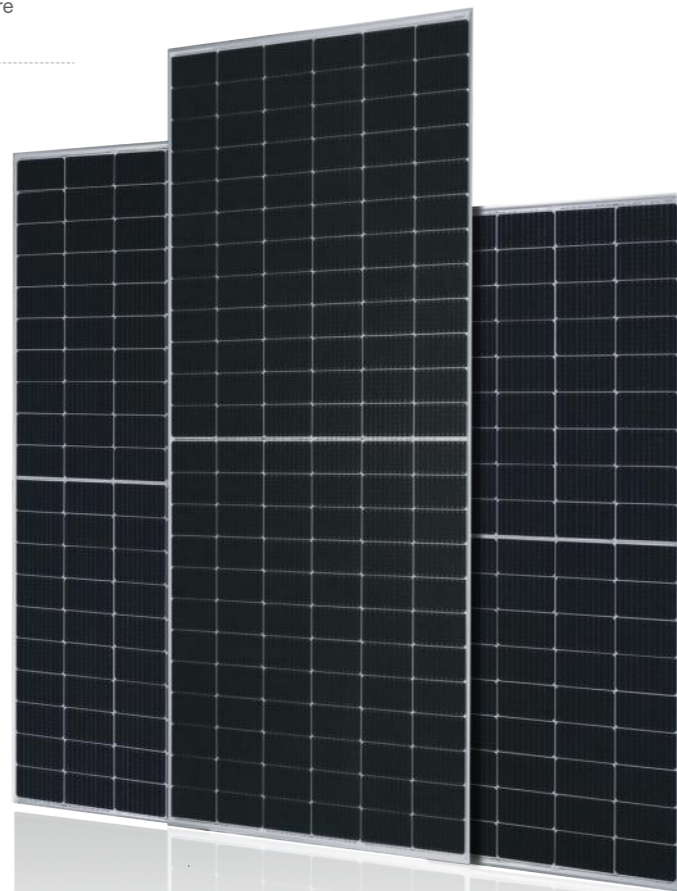
Subsequent annual power degradation no more than **0.45%**

# P-type series

Hardcore Energy, Reliable Technology

### Features and Benefits

-  The application of multi-busbar (MBB) half-cut cell technology brings stronger resistance to shade and lower risk of hot spot.
-  Strict control on raw materials and process optimization of high efficiency PERC ensure better resistance against PID of PV module.
-  Through harsh weathering tests of sand, dust, salt mist, ammonia, etc., to get stronger weather resistance of outdoor environment.
-  Lower oxygen and carbon content result in lower LID.
-  By series and parallel design, to reduce the series RS and achieve higher power output and lower BOS cost.
-  Lower temperature coefficient and lower operating temperature can ensure higher power generation.



## 182 P-type Monofacial Module



Power Range  
**395W ~ 410W**



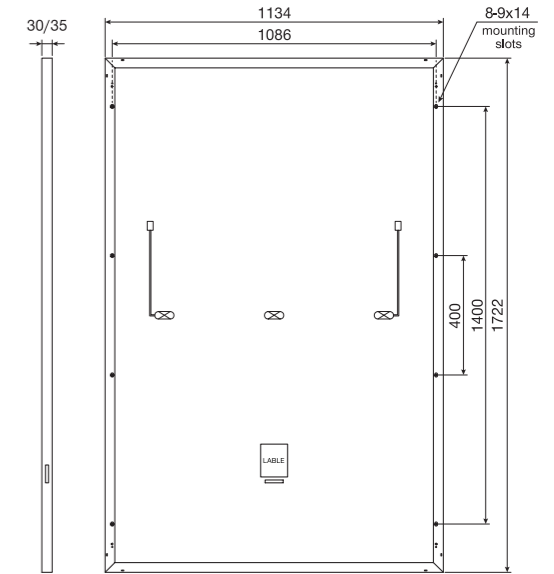
Power Output Tolerance  
**0W ~ +5W**



Maximum Efficiency  
**21%**

\* Customizable with Black Frame.

(Unit: mm)



### Electrical Performance Parameters | STC

Model Type	395D(HPM) 54(182)	400D(HPM) 54(182)	405D(HPM) 54(182)	410D(HPM) 54(182)
Nominal Max. Power P <sub>max</sub> (W)	395	400	405	410
Max. Power Voltage V <sub>mp</sub> (V)	30.75	30.95	31.15	31.35
Max. Power Current I <sub>mp</sub> (A)	12.85	12.93	13.01	13.09
Open Circuit Voltage V <sub>oc</sub> (V)	36.77	36.97	37.17	37.37
Short Circuit Current I <sub>sc</sub> (A)	13.71	13.79	13.87	13.95
Module Efficiency (%)	20.23	20.48	20.74	21.00
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

### Electrical Performance Parameters | NMOT

Model Type	395D(HPM) 54(182)	400D(HPM) 54(182)	405D(HPM) 54(182)	410D(HPM) 54(182)
Nominal Max. Power P <sub>max</sub> (W)	290	295	300	305
Max. Power Voltage V <sub>mp</sub> (V)	27.64	28.00	28.38	28.72
Max. Power Current I <sub>mp</sub> (A)	10.50	10.54	10.58	10.62
Open Circuit Voltage V <sub>oc</sub> (V)	34.68	34.83	34.98	35.13
Short Circuit Current I <sub>sc</sub> (A)	10.94	11.07	11.19	11.24

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

### Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×35mm/30mm
Weight	21.7kg(35mm)/20.6kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy(White/Black)
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), landscape 1400mm(+) 200mm(-), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	806pcs(35mm)/936pcs(30mm)

### Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (Isc)	+0.048%
Temperature Coefficient (Voc)	-0.26%
Temperature Coefficient (Pmax)	-0.34%

### Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.55%**



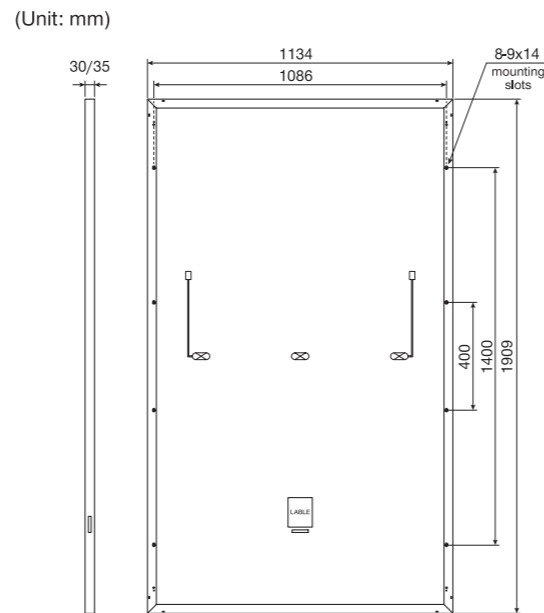
# 182 P-type Monofacial Module

Power Range  
**440W ~ 455W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.02%**

\*Customizable with Black Frame.



## Electrical Performance Parameters | STC

Model Type	440D(HPM) 60(182)	445D(HPM) 60(182)	450D(HPM) 60(182)	455D(HPM) 60(182)
Nominal Max. Power P <sub>max</sub> (W)	440	445	450	455
Max. Power Voltage V <sub>mp</sub> (V)	34.13	34.33	34.53	34.73
Max. Power Current I <sub>mp</sub> (A)	12.90	12.97	13.04	13.11
Open Circuit Voltage V <sub>oc</sub> (V)	40.92	41.12	41.32	41.52
Short Circuit Current I <sub>sc</sub> (A)	13.76	13.83	13.90	13.97
Module Efficiency (%)	20.33	20.56	20.79	21.02
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	440D(HPM) 60(182)	445D(HPM) 60(182)	450D(HPM) 60(182)	455D(HPM) 60(182)
Nominal Max. Power P <sub>max</sub> (W)	320	325	330	335
Max. Power Voltage V <sub>mp</sub> (V)	30.77	31.08	31.37	31.67
Max. Power Current I <sub>mp</sub> (A)	10.40	10.46	10.52	10.58
Open Circuit Voltage V <sub>oc</sub> (V)	38.72	38.79	38.87	39.01
Short Circuit Current I <sub>sc</sub> (A)	10.64	10.69	10.74	10.79

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×35mm/30mm
Weight	23.2kg(35mm)/22.1kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy(White/Black)
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+) 230mm(-), landscape 1400mm(+) 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	744pcs(35mm)/864pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

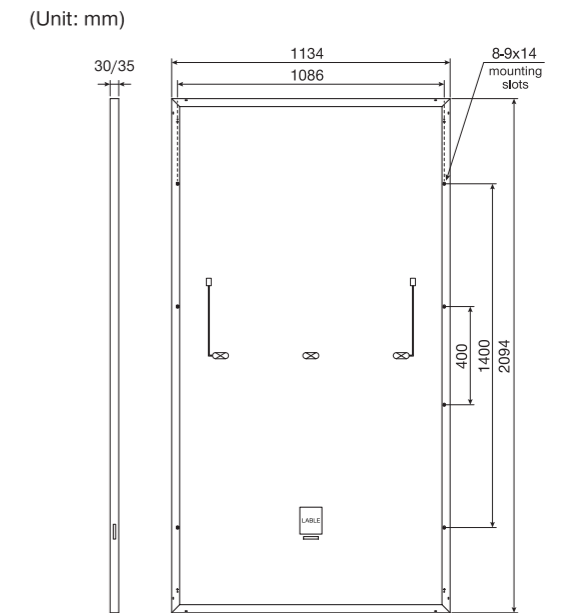
# 182 P-type Monofacial Module

Power Range  
**485W ~ 500W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.06%**

\*Customizable with Black Frame.



## Electrical Performance Parameters | STC

Model Type	485D(HPM) 66(182)	490D(HPM) 66(182)	495D(HPM) 66(182)	500D(HPM) 66(182)
Nominal Max. Power P <sub>max</sub> (W)	485	490	495	500
Max. Power Voltage V <sub>mp</sub> (V)	37.80	38.00	38.20	38.40
Max. Power Current I <sub>mp</sub> (A)	12.84	12.90	12.96	13.03
Open Circuit Voltage V <sub>oc</sub> (V)	44.87	45.07	45.27	45.47
Short Circuit Current I <sub>sc</sub> (A)	13.70	13.77	13.83	13.89
Module Efficiency (%)	20.42	20.64	20.85	21.06
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	485D(HPM) 66(182)	490D(HPM) 66(182)	495D(HPM) 66(182)	500D(HPM) 66(182)
Nominal Max. Power P <sub>max</sub> (W)	365	370	375	380
Max. Power Voltage V <sub>mp</sub> (V)	34.80	34.97	35.34	35.51
Max. Power Current I <sub>mp</sub> (A)	10.50	10.60	10.62	10.71
Open Circuit Voltage V <sub>oc</sub> (V)	42.31	42.45	42.70	42.87
Short Circuit Current I <sub>sc</sub> (A)	11.07	11.13	11.23	11.30

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2094×1134×35mm/30mm
Weight	25.1kg(35mm)/23.8kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy(White/Black)
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+) 200mm(-), landscape 1400mm(+) 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	682pcs(35mm)/792pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.55%**

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

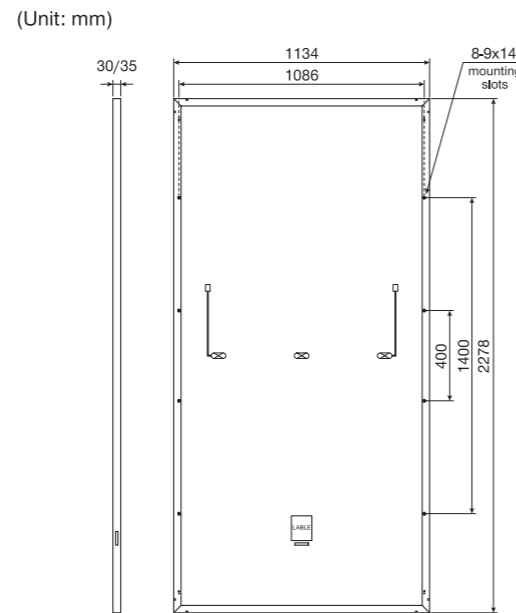
Subsequent annual power degradation no more than **0.55%**

# 182 P-type Monofacial Module

Power Range  
**525W ~ 550W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.29%**



## Electrical Performance Parameters | STC

Model Type	525D(HPM) 72(182)	530D(HPM) 72(182)	535D(HPM) 72(182)	540D(HPM) 72(182)	545D(HPM) 72(182)	550D(HPM) 72(182)	
Nominal Max. Power	Pmax(W)	525	530	535	540	545	550
Max. Power Voltage	Vmp(V)	41.00	41.20	41.40	41.60	41.80	42.00
Max. Power Current	Imp(A)	12.81	12.87	12.92	12.98	13.04	13.10
Open Circuit Voltage	Voc(V)	48.82	49.02	49.22	49.42	49.62	49.82
Short Circuit Current	Isc(A)	13.68	13.74	13.79	13.85	13.91	13.97
Module Efficiency	(%)	20.32	20.52	20.71	20.90	21.10	21.29
Power Output Tolerance	(W)	0~+5W					

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	525D(HPM) 72(182)	530D(HPM) 72(182)	535D(HPM) 72(182)	540D(HPM) 72(182)	545D(HPM) 72(182)	550D(HPM) 72(182)	
Nominal Max. Power	Pmax(W)	390	394	398	402	405	409
Max. Power Voltage	Vmp(V)	37.57	37.74	37.91	38.08	38.25	38.42
Max. Power Current	Imp(A)	10.40	10.45	10.50	10.55	10.60	10.65
Open Circuit Voltage	Voc(V)	46.44	46.51	46.57	46.65	46.72	46.84
Short Circuit Current	Isc(A)	11.03	11.10	11.14	11.19	11.26	11.33

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×35mm/30mm
Weight	28.0kg(35mm)/26.3kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	620pcs(35mm)/720pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (Isc)	+0.048%
Temperature Coefficient (Voc)	-0.26%
Temperature Coefficient (Pmax)	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

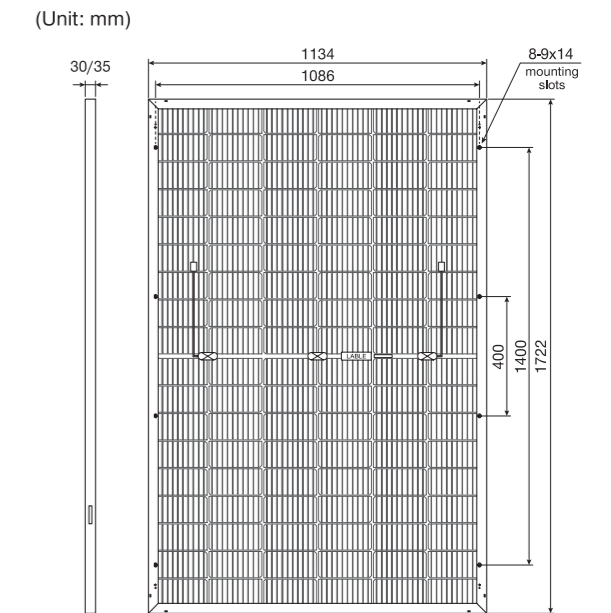
# 182 P-type Bifacial Module

Power Range  
**400W ~ 415W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.25%**

Double sides power output to reach higher comprehensive efficiency and get more profit.



## Electrical Performance Parameters | STC

Model Type	400D(HBD) 54(182)	405D(HBD) 54(182)	410D(HBD) 54(182)	415D(HBD) 54(182)	
Nominal Max. Power	Pmax(W)	400	405	410	415
Max. Power Voltage	Vmp(V)	31.13	31.35	31.57	31.79
Max. Power Current	Imp(A)	12.85	12.92	12.99	13.06
Open Circuit Voltage	Voc(V)	36.96	37.08	37.20	37.34
Short Circuit Current	Isc(A)	13.74	13.81	13.88	13.95
Module Efficiency	(%)	20.48	20.74	21.00	21.25
Power Output Tolerance	(W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	400D(HBD) 54(182)	405D(HBD) 54(182)	410D(HBD) 54(182)	415D(HBD) 54(182)	
Nominal Max. Power	Pmax(W)	275	282	287	292
Max. Power Voltage	Vmp(V)	26.55	27.12	27.50	27.87
Max. Power Current	Imp(A)	10.36	10.40	10.44	10.48
Open Circuit Voltage	Voc(V)	34.62	34.74	34.86	35.00
Short Circuit Current	Isc(A)	11.09	11.15	11.20	11.26

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1722×1134×35mm/30mm
Weight	24.1kg(35mm)/23.4kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	806pcs(35mm)/936pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (Isc)	+0.048%
Temperature Coefficient (Voc)	-0.26%
Temperature Coefficient (Pmax)	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.55%**

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.45%**

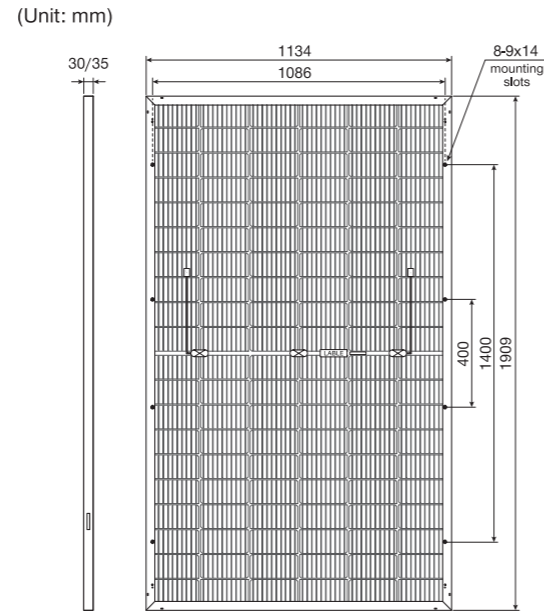
# 182 P-type Bifacial Module

Power Range  
**445W ~ 460W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.25%**

Double sides power output to reach higher comprehensive efficiency and get more profit.



### Electrical Performance Parameters | STC

Model Type	445D(HBD) 60(182)	450D(HBD) 60(182)	455D(HBD) 60(182)	460D(HBD) 60(182)
Nominal Max. Power P <sub>max</sub> (W)	445	450	455	460
Max. Power Voltage V <sub>mp</sub> (V)	34.58	34.78	34.98	35.18
Max. Power Current I <sub>mp</sub> (A)	12.87	12.94	13.01	13.08
Open Circuit Voltage V <sub>oc</sub> (V)	41.08	41.20	41.32	41.46
Short Circuit Current I <sub>sc</sub> (A)	13.76	13.83	13.90	13.97
Module Efficiency (%)	20.56	20.79	21.02	21.25
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

### Electrical Performance Parameters | NMOT

Model Type	445D(HBD) 60(182)	450D(HBD) 60(182)	455D(HBD) 60(182)	460D(HBD) 60(182)
Nominal Max. Power P <sub>max</sub> (W)	317	322	327	332
Max. Power Voltage V <sub>mp</sub> (V)	30.54	30.91	31.27	31.62
Max. Power Current I <sub>mp</sub> (A)	10.38	10.42	10.46	10.50
Open Circuit Voltage V <sub>oc</sub> (V)	38.78	38.90	39.02	39.14
Short Circuit Current I <sub>sc</sub> (A)	11.11	11.17	11.22	11.28

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

### Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	1909×1134×35mm/30mm
Weight	26.9kg(35mm)/25.7kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	744pcs(35mm)/864pcs(30mm)

### Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

### Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

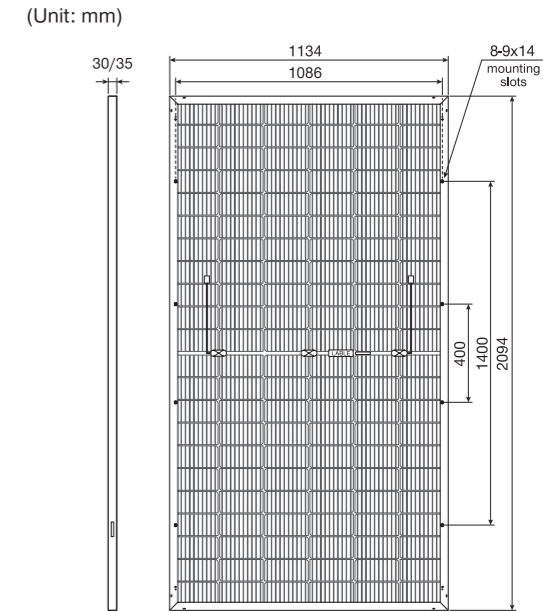
# 182 P-type Bifacial Module

Power Range  
**490W ~ 505W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.27%**

Double sides power output to reach higher comprehensive efficiency and get more profit.



### Electrical Performance Parameters | STC

Model Type	490D(HBD) 66(182)	495D(HBD) 66(182)	500D(HBD) 66(182)	505D(HBD) 66(182)
Nominal Max. Power P <sub>max</sub> (W)	490	495	500	505
Max. Power Voltage V <sub>mp</sub> (V)	38.02	38.20	38.38	38.56
Max. Power Current I <sub>mp</sub> (A)	12.89	12.96	13.03	13.10
Open Circuit Voltage V <sub>oc</sub> (V)	45.24	45.36	45.48	45.62
Short Circuit Current I <sub>sc</sub> (A)	13.78	13.85	13.92	13.99
Module Efficiency (%)	20.64	20.85	21.06	21.27
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

### Electrical Performance Parameters | NMOT

Model Type	490D(HBD) 66(182)	495D(HBD) 66(182)	500D(HBD) 66(182)	505D(HBD) 66(182)
Nominal Max. Power P <sub>max</sub> (W)	362	367	372	377
Max. Power Voltage V <sub>mp</sub> (V)	34.81	35.16	35.50	35.84
Max. Power Current I <sub>mp</sub> (A)	10.40	10.44	10.48	10.52
Open Circuit Voltage V <sub>oc</sub> (V)	42.94	43.06	43.18	43.32
Short Circuit Current I <sub>sc</sub> (A)	11.13	11.19	11.24	11.30

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

### Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2094×1134×35mm/30mm
Weight	29.4kg(35mm)/28.4kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 200mm(-), landscape 1400mm(+), 1400mm(-) Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	682pcs(35mm)/792pcs(30mm)

### Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

### Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.45%**

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.45%**

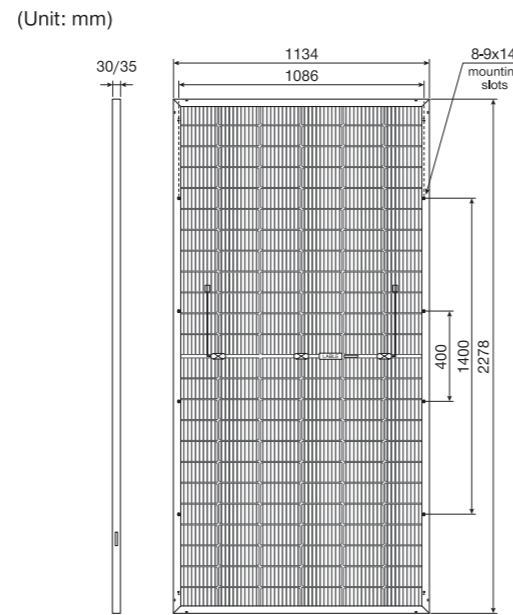
# 182 P-type Bifacial Module

Power Range  
**535W ~ 550W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.29%**

Double sides power output to reach higher comprehensive efficiency and get more profit.



## Electrical Performance Parameters | STC

Model Type	535D(HBD) 72(182)	540D(HBD) 72(182)	545D(HBD) 72(182)	550D(HBD) 72(182)
Nominal Max. Power P <sub>max</sub> (W)	535	540	545	550
Max. Power Voltage V <sub>mp</sub> (V)	41.45	41.61	41.77	41.93
Max. Power Current I <sub>mp</sub> (A)	12.91	12.98	13.05	13.12
Open Circuit Voltage V <sub>oc</sub> (V)	49.40	49.52	49.64	49.78
Short Circuit Current I <sub>sc</sub> (A)	13.80	13.87	13.94	14.01
Module Efficiency (%)	20.71	20.90	21.10	21.29
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	535D(HBD) 72(182)	540D(HBD) 72(182)	545D(HBD) 72(182)	550D(HBD) 72(182)
Nominal Max. Power P <sub>max</sub> (W)	405	408	411	414
Max. Power Voltage V <sub>mp</sub> (V)	38.78	38.88	39.00	39.13
Max. Power Current I <sub>mp</sub> (A)	10.42	10.47	10.52	10.57
Open Circuit Voltage V <sub>oc</sub> (V)	47.18	47.37	47.56	47.75
Short Circuit Current I <sub>sc</sub> (A)	11.15	11.21	11.26	11.31

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	182mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	144pcs(6×24)
Module Dimension	2278×1134×35mm/30mm
Weight	32.3kg(35mm)/31.2kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait <sup>400mm(+)</sup> / <sub>200mm(-)</sub> , landscape <sup>1400mm(+)</sup> / <sub>1400mm(-)</sub> Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	620pcs(35mm)/720pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

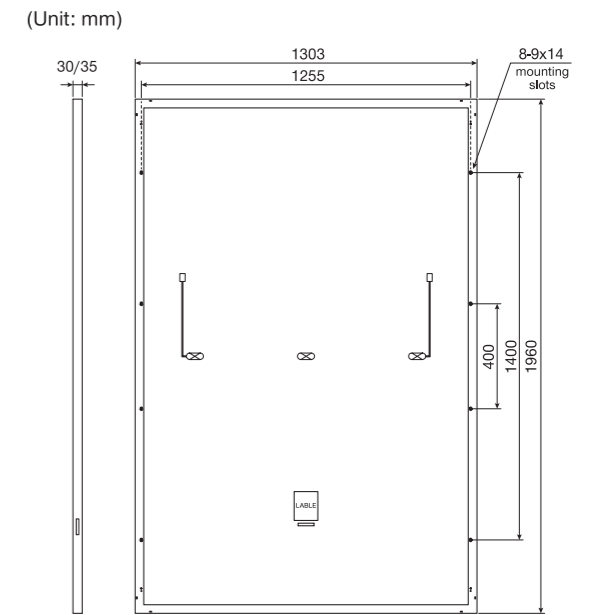
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	25A

# 210 P-type Monofacial Module

Power Range  
**525W ~ 540W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.14%**



## Electrical Performance Parameters | STC

Model Type	525D(HPM) 54(210)	530D(HPM) 54(210)	535D(HPM) 54(210)	540D(HPM) 54(210)
Nominal Max. Power P <sub>max</sub> (W)	525	530	535	540
Max. Power Voltage V <sub>mp</sub> (V)	30.10	30.30	30.50	30.70
Max. Power Current I <sub>mp</sub> (A)	17.45	17.50	17.55	17.60
Open Circuit Voltage V <sub>oc</sub> (V)	36.80	37.20	37.60	37.80
Short Circuit Current I <sub>sc</sub> (A)	18.34	18.38	18.42	18.46
Module Efficiency (%)	20.56	20.75	20.95	21.14
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	525D(HPM) 54(210)	530D(HPM) 54(210)	535D(HPM) 54(210)	540D(HPM) 54(210)
Nominal Max. Power P <sub>max</sub> (W)	398	402	406	410
Max. Power Voltage V <sub>mp</sub> (V)	28.33	28.54	28.74	28.94
Max. Power Current I <sub>mp</sub> (A)	14.05	14.09	14.13	14.17
Open Circuit Voltage V <sub>oc</sub> (V)	34.40	34.60	34.80	35.00
Short Circuit Current I <sub>sc</sub> (A)	14.80	14.84	14.88	14.92

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1960×1303×35mm/30mm
Weight	28.4kg(35mm)/27.3kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait <sup>400mm(+)</sup> / <sub>200mm(-)</sub> , landscape <sup>1400mm(+)</sup> / <sub>1400mm(-)</sub> Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	558pcs(35mm)/648pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.45%**

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

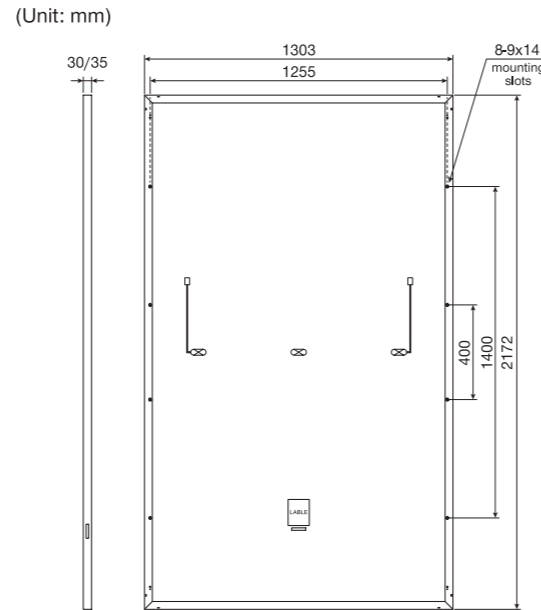
Subsequent annual power degradation no more than **0.55%**

# 210 P-type Monofacial Module

Power Range  
**585W ~ 600W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.2%**



## Electrical Performance Parameters | STC

Model Type	585D(HPM) 60(210)	590D(HPM) 60(210)	595D(HPM) 60(210)	600D(HPM) 60(210)
Nominal Max. Power P <sub>max</sub> (W)	585	590	595	600
Max. Power Voltage V <sub>mp</sub> (V)	33.70	33.90	34.10	34.30
Max. Power Current I <sub>mp</sub> (A)	17.36	17.41	17.45	17.50
Open Circuit Voltage V <sub>oc</sub> (V)	40.80	41.00	41.20	41.40
Short Circuit Current I <sub>sc</sub> (A)	18.36	18.40	18.44	18.48
Module Efficiency (%)	20.67	20.85	21.02	21.20
Power Output Tolerance (W)	0~+5W			

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	585D(HPM) 60(210)	590D(HPM) 60(210)	595D(HPM) 60(210)	600D(HPM) 60(210)
Nominal Max. Power P <sub>max</sub> (W)	443	447	451	454
Max. Power Voltage V <sub>mp</sub> (V)	31.54	31.73	31.92	32.02
Max. Power Current I <sub>mp</sub> (A)	14.05	14.09	14.13	14.18
Open Circuit Voltage V <sub>oc</sub> (V)	38.50	38.70	38.90	39.10
Short Circuit Current I <sub>sc</sub> (A)	14.81	14.85	14.89	14.93

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	2172×1303×35mm/30mm
Weight	31.2kg(35mm)/29.8kg(30mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), landscape 1400mm(+), 200mm(+), 1400mm(+). Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	558pcs(35mm)/648pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

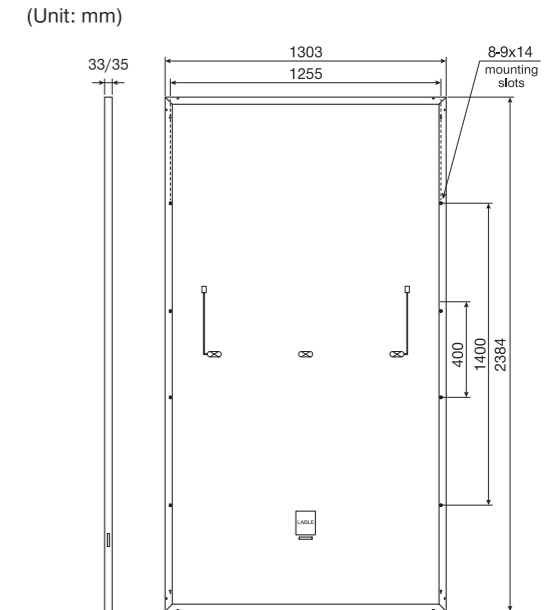
Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

# 210 P-type Monofacial Module

Power Range  
**645W ~ 665W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.41%**



## Electrical Performance Parameters | STC

Model Type	645D(HPM) 66(210)	650D(HPM) 66(210)	655D(HPM) 66(210)	660D(HPM) 66(210)	665D(HPM) 66(210)
Nominal Max. Power P <sub>max</sub> (W)	645	650	655	660	665
Max. Power Voltage V <sub>mp</sub> (V)	37.30	37.50	37.70	37.90	38.10
Max. Power Current I <sub>mp</sub> (A)	17.30	17.34	17.38	17.42	17.46
Open Circuit Voltage V <sub>oc</sub> (V)	45.00	45.20	45.40	45.60	45.80
Short Circuit Current I <sub>sc</sub> (A)	18.38	18.42	18.46	18.50	18.54
Module Efficiency (%)	20.76	20.92	21.09	21.25	21.41
Power Output Tolerance (W)	0~+5W				

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	645D(HPM) 66(210)	650D(HPM) 66(210)	655D(HPM) 66(210)	660D(HPM) 66(210)	665D(HPM) 66(210)
Nominal Max. Power P <sub>max</sub> (W)	488	492	496	500	504
Max. Power Voltage V <sub>mp</sub> (V)	34.74	34.92	35.04	35.28	35.48
Max. Power Current I <sub>mp</sub> (A)	14.05	14.09	14.13	14.18	14.21
Open Circuit Voltage V <sub>oc</sub> (V)	42.50	42.70	42.90	43.10	43.20
Short Circuit Current I <sub>sc</sub> (A)	14.82	14.86	14.90	14.94	14.98

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2384×1303×35mm/33mm
Weight	33.8kg(35mm)/33.3kg(33mm)
Front Glass	3.2mm, highly transparent tempered glass with anti-reflective coating
Back Sheet	White
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), landscape 1400mm(+), 200mm(+), 1400mm(+). Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/33pcs(33mm)
Per Container(40'HQ)	558pcs(35mm)/594pcs(33mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.55%**

**12** years product workmanship warranty

**25** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.55%**

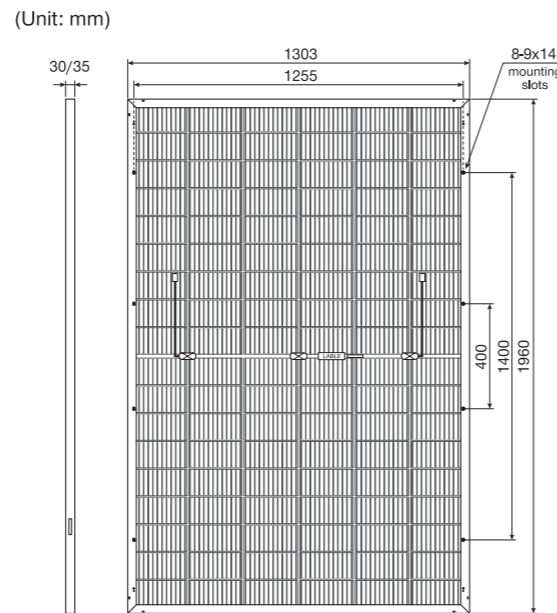
# 210 P-type Bifacial Module

Power Range  
**525W ~ 545W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.34%**

Double sides power output to reach higher comprehensive efficiency and get more profit.



## Electrical Performance Parameters | STC

Model Type	525D(HBD) 54(210)	530D(HBD) 54(210)	535D(HBD) 54(210)	540D(HBD) 54(210)	545D(HBD) 54(210)
Nominal Max. Power P <sub>max</sub> (W)	525	530	535	540	545
Max. Power Voltage V <sub>mp</sub> (V)	30.43	30.63	30.83	31.03	31.23
Max. Power Current I <sub>mp</sub> (A)	17.26	17.31	17.36	17.41	17.46
Open Circuit Voltage V <sub>oc</sub> (V)	37.00	37.20	37.40	37.60	37.80
Short Circuit Current I <sub>sc</sub> (A)	18.20	18.24	18.28	18.32	18.36
Module Efficiency (%)	20.56	20.75	20.95	21.14	21.34
Power Output Tolerance (W)	0~+5W				

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	525D(HBD) 54(210)	530D(HBD) 54(210)	535D(HBD) 54(210)	540D(HBD) 54(210)	545D(HBD) 54(210)
Nominal Max. Power P <sub>max</sub> (W)	398	402	406	410	414
Max. Power Voltage V <sub>mp</sub> (V)	28.43	28.64	28.84	29.04	29.24
Max. Power Current I <sub>mp</sub> (A)	14.00	14.04	14.08	14.12	14.16
Open Circuit Voltage V <sub>oc</sub> (V)	34.60	34.80	35.00	35.20	35.40
Short Circuit Current I <sub>sc</sub> (A)	14.68	14.72	14.76	14.80	14.84

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	108pcs(6×18)
Module Dimension	1960×1303×35mm/30mm
Weight	32.8kg(35mm)/31.5kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 230mm(-), landscape 1400mm(+), 1400mm(-). Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	558pcs(35mm)/648pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

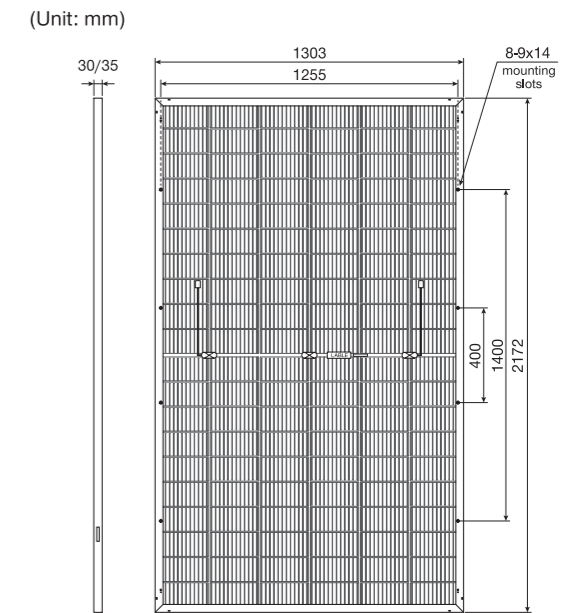
# 210 P-type Bifacial Module

Power Range  
**585W ~ 605W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.38%**

Double sides power output to reach higher comprehensive efficiency and get more profit.



## Electrical Performance Parameters | STC

Model Type	585D(HBD) 60(210)	590D(HBD) 60(210)	595D(HBD) 60(210)	600D(HBD) 60(210)	605D(HBD) 60(210)
Nominal Max. Power P <sub>max</sub> (W)	585	590	595	600	605
Max. Power Voltage V <sub>mp</sub> (V)	33.93	34.13	34.33	34.53	34.73
Max. Power Current I <sub>mp</sub> (A)	17.25	17.29	17.34	17.38	17.43
Open Circuit Voltage V <sub>oc</sub> (V)	41.20	41.40	41.60	41.80	42.00
Short Circuit Current I <sub>sc</sub> (A)	18.25	18.29	18.33	18.37	18.41
Module Efficiency (%)	20.67	20.85	21.02	21.20	21.38
Power Output Tolerance (W)	0~+5W				

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	585D(HBD) 60(210)	590D(HBD) 60(210)	595D(HBD) 60(210)	600D(HBD) 60(210)	605D(HBD) 60(210)
Nominal Max. Power P <sub>max</sub> (W)	443	447	451	455	459
Max. Power Voltage V <sub>mp</sub> (V)	31.63	31.82	32.01	32.21	32.40
Max. Power Current I <sub>mp</sub> (A)	14.01	14.05	14.09	14.13	14.17
Open Circuit Voltage V <sub>oc</sub> (V)	38.80	39.00	39.20	39.40	39.60
Short Circuit Current I <sub>sc</sub> (A)	14.71	14.75	14.79	14.83	14.87

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	120pcs(6×20)
Module Dimension	2172×1303×35mm/30mm
Weight	35.6kg(35mm)/33.7kg(30mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), 230mm(-), landscape 1400mm(+), 1400mm(-). Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/36pcs(30mm)
Per Container(40'HQ)	558pcs(35mm)/648pcs(30mm)

## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.45%**

**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.45%**

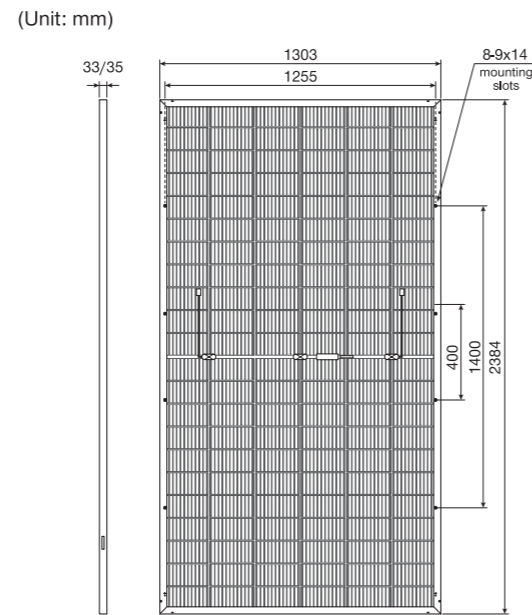
# 210 P-type Bifacial Module

Power Range  
**645W ~ 665W**

Power Output Tolerance  
**0W ~ +5W**

Maximum Efficiency  
**21.41%**

Double sides power output to reach higher comprehensive efficiency and get more profit.



## Electrical Performance Parameters | STC

Model Type	645D(HBD) 66(210)	650D(HBD) 66(210)	655D(HBD) 66(210)	660D(HBD) 66(210)	665D(HBD) 66(210)
Nominal Max. Power P <sub>max</sub> (W)	645	650	655	660	665
Max. Power Voltage V <sub>mp</sub> (V)	37.43	37.63	37.83	38.03	38.23
Max. Power Current I <sub>mp</sub> (A)	17.24	17.28	17.32	17.36	17.40
Open Circuit Voltage V <sub>oc</sub> (V)	45.40	45.60	45.80	46.00	46.20
Short Circuit Current I <sub>sc</sub> (A)	18.30	18.34	18.38	18.42	18.46
Module Efficiency (%)	20.76	20.92	21.09	21.25	21.41
Power Output Tolerance (W)	0~+5W				

\* STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5.  
\* Power measurement tolerance ±3%.

## Electrical Performance Parameters | NMOT

Model Type	645D(HBD) 66(210)	650D(HBD) 66(210)	655D(HBD) 66(210)	660D(HBD) 66(210)	665D(HBD) 66(210)
Nominal Max. Power P <sub>max</sub> (W)	488	492	496	500	504
Max. Power Voltage V <sub>mp</sub> (V)	34.84	35.04	35.22	35.42	35.62
Max. Power Current I <sub>mp</sub> (A)	14.02	14.06	14.08	14.12	14.16
Open Circuit Voltage V <sub>oc</sub> (V)	42.80	43.00	43.20	43.40	43.60
Short Circuit Current I <sub>sc</sub> (A)	14.74	14.78	14.82	14.86	14.90

\* NMOT: Irradiance 800W/m<sup>2</sup>, Cell Temperature 20°C, Wind Speed 1m/s.  
\* Power measurement tolerance ±3%.

## Structure Performance

Solar Cell Type	210mm Mono-crystalline (Half Cell)
Solar Cell Arrangement	132pcs(6×22)
Module Dimension	2384×1303×35mm/33mm
Weight	38.2kg(35mm)/37.8kg(33mm)
Front Glass	2.0mm, highly transparent tempered glass with anti-reflective coating
Frame	Anodized Aluminum Alloy
Junction Box	IP68 rated
Cable	4mm <sup>2</sup> , portrait 400mm(+), landscape 1400mm(+), 230mm(-), 1400mm(-). Length can be customized
Diode Quantity	3 pcs
Front side/Rear side	5400pa/2400pa
Connector	MC4 Compatible
Per Pallet	31pcs(35mm)/33pcs(33mm)
Per Container(40'HQ)	558pcs(35mm)/594pcs(33mm)

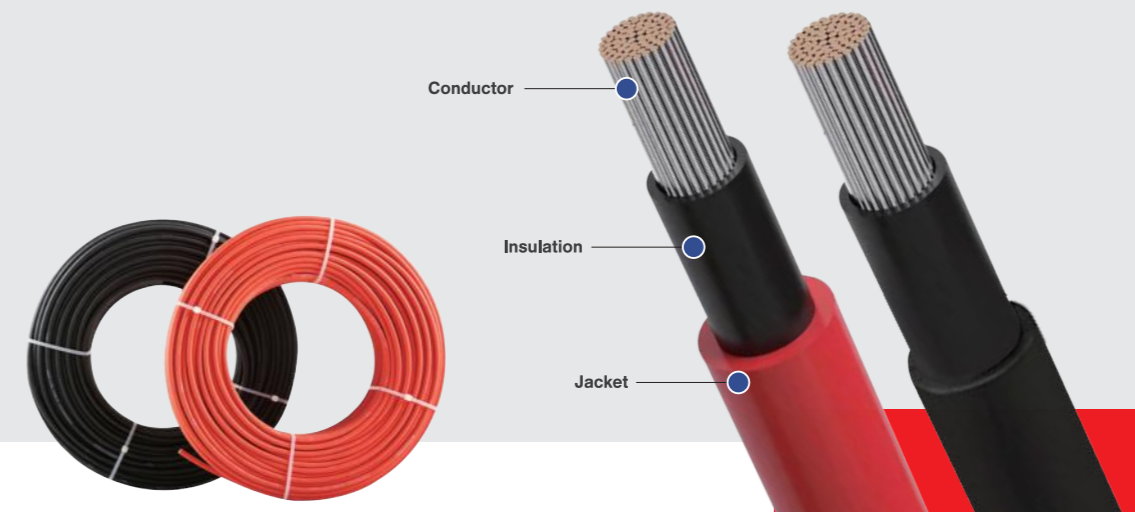
## Temperature Characteristics

Nominal Module Operating Temperature	44±2°C
Temperature Coefficient (I <sub>sc</sub> )	+0.048%
Temperature Coefficient (V <sub>oc</sub> )	-0.26%
Temperature Coefficient (P <sub>max</sub> )	-0.34%

## Maximum Parameters

Working Temperature	-40~+85°C
Maximum System Voltage	1500V DC
Nominal Maximum Fuse Current	30A

# PHOTOVOLTAIC POWER GENERATION SYSTEM WIRES



Model Type	Rated voltage V		Execution standards
	Direct current DC	Communication AC(U <sub>0</sub> /U)	
PV1-F	1500	600/1000	2plg 1169/08-2007
62930 IEC 131	1500	1000/1000	IEC 62930:2017
H1Z2Z2-K	1500	1000/1000	EN 50618:2014
PV-YJYJ	1500	600/1000	NB/T 42073-2016

Nominal cross-section mm <sup>2</sup>	Conductor class	Reference outer diameter	20°C maximum DC resistance Ω/km	20°C Minimal insulation resistance Ω·cm	90°C Minimal insulation resistance Ω·cm	Ampacity A		
						Single core in air	Single core on the surface	Two cores on the surface
2.5	5	5.1	8.21	1×10 <sup>11</sup>	1×10 <sup>11</sup>	41	39	33
4	5	5.6	5.09	1×10 <sup>11</sup>	1×10 <sup>11</sup>	55	52	44
6	5	6.2	3.39	1×10 <sup>11</sup>	1×10 <sup>11</sup>	70	67	57

## USES AND CHARACTERISTICS

- Uses: Suitable for series cables between photovoltaic modules and components in photovoltaic power generation systems, parallel cables between strings and strings to DC distribution boxes (combiner boxes) and cables between DC distribution boxes and inverters; It is also suitable for AC cables for connecting inverters to the transmission grid.
- Product features: the conductor using tinned copper wire can effectively protect the copper wire oxidation and discoloration so that the conductivity decreases, insulation and sheath using electronic irradiation cross-linking, improve the physical and mechanical properties of the product and weather resistance environmental performance, so that the product can be used in -40 °C to 90 °C ambient temperature.

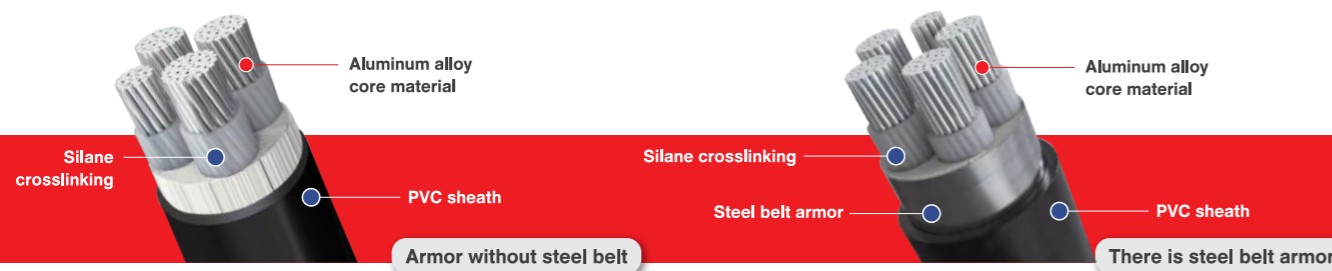
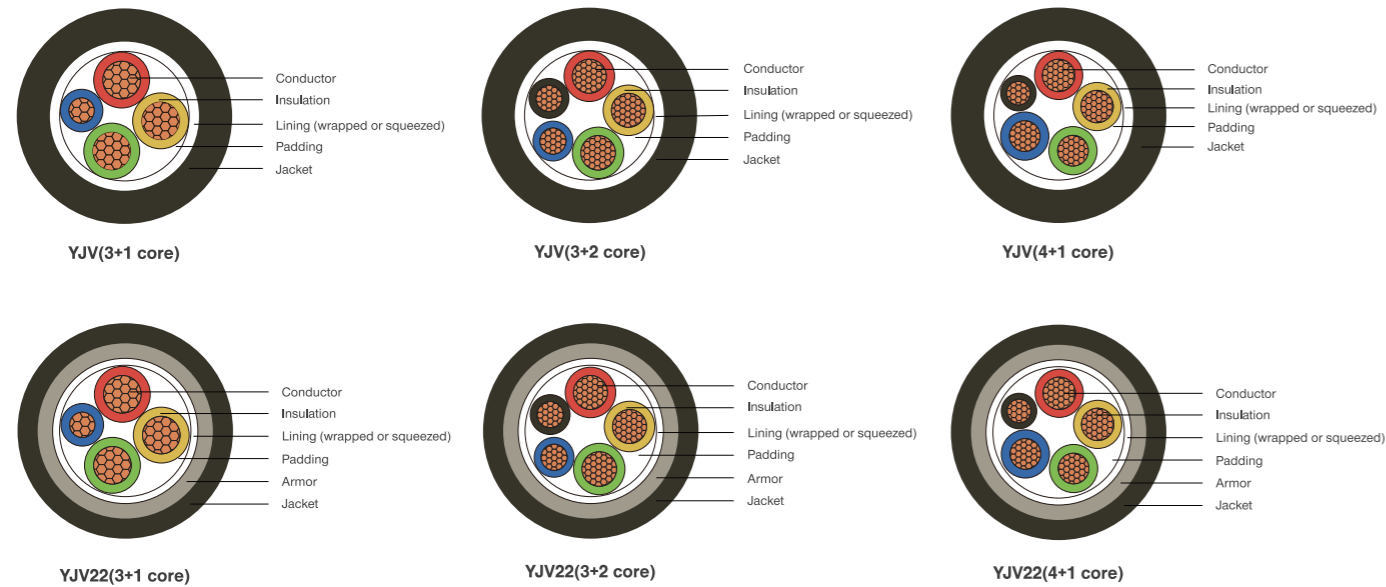
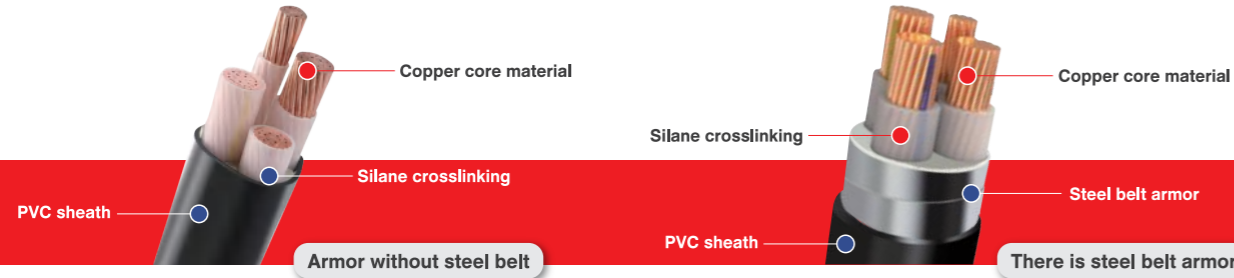
**12** years product workmanship warranty

**30** years linear power output warranty

1st year power degradation no more than **2%**

Subsequent annual power degradation no more than **0.45%**

# LOW VOLTAGE CABLE



Model Type	Voltage level KV	Product name	Execution standards
YJV	0.6/1	Copper core crosslinked polyethylene insulated polyvinyl chloride sheathed power cable	GB/T 12706.1-2020
YJV22	0.6/1	Copper core XIPE insulated steel tape armored polyvinyl chloride sheathed power cable	GB/T 12706.1-2020
ZC-YJV	0.6/1	Flame retardant Class C copper core crosslinked polyethylene insulated polyvinyl chloride sheathed power cable	GB/T 12706.1-2020
ZC-YJV22	0.6/1	Flame-retardant Class C copper core crosslinked polyethylene steel tape armored ene insulated polyvinyl chloride sheathed power cable	GB/T 12706.1-2020
WDZ-YJV	0.6/1	Copper core crosslinked polyethylene insulated halogen-free low smoke flame retardant polyolefin sheathed power cable	GB/T 12706.1-2020
WDZ-YJV23	0.6/1	Copper core crosslinked polyethylene insulated steel tape armored polyethylene sheathed steel tape armored power cable	GB/T 12706.1-2020
ZC-YJLHV	0.6/1	Flame retardant Class C aluminum alloy core crosslinked polyethylene insulated polyhalogen-free low smoke flame retardant polyolefin sheathed power cable	GB/T 31840.1-2015
ZC-YJLHV22	0.6/1	Flame retardant Class C aluminum alloy core crosslinked polyethylene insulated polysteel tape armored halogen-free low smoke flame retardant polyolefin sheathed power cable	GB/T 31840.1-2015
YJLHV	0.6/1	Aluminum alloy core crosslinked polyethylene insulated polyvinyl chloride sheathed power cable	GB/T 31840.1-2015
YJLHV22	0.6/1	Aluminum alloy core crosslinked polyethylene insulated steel tape armored polyvinyl chloride sheathed power cable	GB/T 31840.1-2015
WDZ-YJLHY	0.6/1	Aluminum alloy core crosslinked polyethylene insulated halogen-free low smoke flame retardant polyolefin sheathed power cable	GB/T 31840.1-2015
WDZ-YJLY23	0.6/1	Aluminum alloy core crosslinked polyethylene insulated steel tape armored halogen-free low smoke flame retardant polyolefin sheathed power cable	GB/T 31840.1-2015

YJV, YJLHV 0.6/1kV XLPE insulated power cable (Including flame retardant, halogen-free low-smoke flame retardant and fire-resistant series cables)

YJV22, YJLHV22 0.6/1kV XLPE insulated power cable (Including flame retardant, halogen-free low-smoke flame retardant and fire-resistant series cables)

Nominal cross-section mm <sup>2</sup>	Cable reference Outside diameter mm	Allowable ampacity A			
		Laid in air		Buried laying	
		copper	Aluminum alloy	copper	Aluminum alloy
3×16+1×10	18.6	84	65	110	85
3×25+1×16	22.1	110	87	140	110
3×35+1×16	23.9	135	105	170	130
3×50+1×25	27.4	170	130	205	160
3×70+1×35	31.9	215	165	250	195
3×95+1×50	36.0	265	205	300	235
3×120+1×70	40.3	310	240	345	265
3×150+1×70	44.2	350	270	385	300
3×185+1×95	49.2	405	315	435	340
3×240+1×120	54.7	480	375	500	395
3×300+1×150	60.7	555	435	565	445
3×400+1×185	68.4	640	510	640	510
3×16+2×10	19.9	84	65	110	85
3×25+2×16	23.5	110	87	140	110
3×35+2×16	25.2	135	105	170	130
3×50+2×25	29.3	170	130	205	160
3×70+2×35	33.9	215	165	250	195
3×95+2×50	38.4	265	205	300	235
3×120+2×70	43.3	310	240	345	265
3×150+2×70	46.8	350	270	385	300
3×185+2×95	52.1	405	315	435	340
3×240+2×120	58.0	480	375	500	395
3×300+2×150	64.4	555	435	565	445
4×10+1×6	17.7	65	50	86	66
4×16+1×10	20.4	84	65	110	85
4×25+1×16	24.4	110	87	140	110
4×35+1×16	26.6	135	105	170	130
4×50+1×25	30.6	170	130	205	160
4×70+1×35	35.9	215	165	250	195
4×95+1×50	40.3	265	205	300	235
4×120+1×70	45.3	310	240	345	265
4×150+1×70	49.8	350	270	385	300
4×185+1×95	55.4	405	315	435	340
4×240+1×120	61.6	480	375	500	395
4×300+1×150	68.3	555	435	565	445

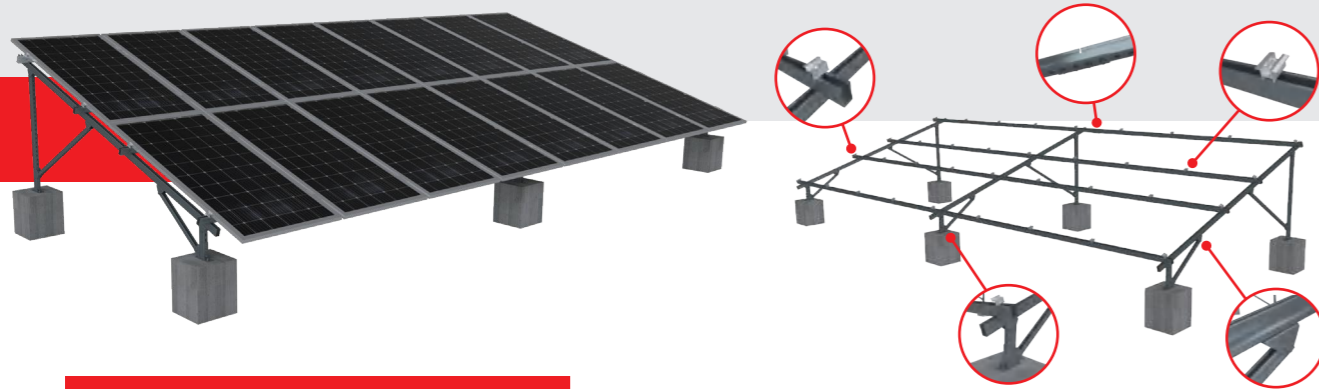
Nominal cross-section mm <sup>2</sup>	Cable reference Outside diameter mm	Allowable ampacity A			
		Laid in air		Buried laying	
		copper	Aluminum alloy	copper	Aluminum alloy
3×16+1×10	20.6	83	64	110	85
3×25+1×16	24.1	110	86	140	110
3×35+1×16	25.9	135	105	170	130
3×50+1×25	29.4	165	125	200	155
3×70+1×35	34.1	210	165	245	190
3×95+1×50	39.8	260	200	300	230
3×120+1×70	44.3	305	235	335	260
3×150+1×70	48.2	345	270	380	295
3×185+1×95	53.6	395	310	430	335
3×240+1×120	59.1	465	365	500	390
3×300+1×150	64.9	535	420	565	440
3×400+1×185	72.8	620	495	650	505
3×16+2×10	21.9	83	64	110	85
3×25+2×16	25.5	110	86	140	110
3×35+2×16	27.2	135	105	170	130
3×50+2×25	31.3	165	125	200	155
3×70+2×35	35.9	210	165	245	190
3×95+2×50	42.2	260	200	300	230
3×120+2×70	47.3	305	235	335	260
3×150+2×70	50.8	345	270	380	295
3×185+2×95	56.5	395	310	430	335
3×240+2×120	62.4	465	365	500	390
3×300+2×150	68.8	535	420	565	440
4×16+1×10	22.4	83	64	110	85
4×25+1×16	26.4	110	86	140	110
4×35+1×16	28.6	135	105	170	130
4×50+1×25	32.8	165	125	200	155
4×70+1×35	39.1	210	165	245	190
4×95+1×50	44.3	260	200	300	230
4×120+1×70	49.1	305	235	335	260
4×150+1×70	54.2	345	270	380	295
4×185+1×95	59.8	395	310	430	335
4×240+1×120	66.0	465	365	500	390
4×300+1×150	72.7	535	420	565	440
4×400+1×185	82.9	620	495	650	505

## USES AND CHARACTERISTICS

- Uses: Suitable for fixed installation cables in distribution networks or industrial installations with AC rated voltage of 1kV and below; In photovoltaic power stations, it is mainly used between combiner boxes and low-voltage cabinets in electric rooms.
- Product features: XLPE cable has simple structure, easy to use, not limited by laying drop, and the maximum allowable temperature of the conductor for a long time is 90 °C. The conductor adopts high-purity oxygen-free copper, which has high conductivity and large ampacity; XLPE insulation has excellent electrical properties, mechanical properties and aging resistance. Unarmored cable is suitable for laying indoors, pipelines, tunnels, cable trenches; Armoured cables are suitable for laying indoors, pipelines, tunnels, cable trenches and underground direct burial, and can withstand mechanical external forces.



# MOUNTING SYSTEM FOR CONCRETE ROOF



## Mounting Components

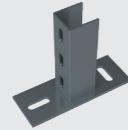
Steel beam	
Size / Model	U41×72×2.5 mm
Material	Q235B
Surface treatment & mechanical property	Hot-dip galvanization > 55µm Tensile strength > 375N/mm <sup>2</sup> Yield strength 235N/mm <sup>2</sup>



Column	
Size / Model	U41×72×2.5 mm
Material	Q235B
Surface treatment & mechanical property	Hot-dip galvanization > 55µm Tensile strength > 375N/mm <sup>2</sup> Yield strength 235N/mm <sup>2</sup>



Base	
Size / Model	160×153×3 mm
Material	Q235B
Surface treatment & mechanical property	Hot-dip galvanization > 55µm Tensile strength > 375N/mm <sup>2</sup> Yield strength 235N/mm <sup>2</sup>



Steel beam connector	
Size / Model	50×200×3 mm
Material	Q235B
Surface treatment & mechanical property	Hot-dip galvanization > 55µm Tensile strength > 375N/mm <sup>2</sup> Yield strength 235N/mm <sup>2</sup>



Triangle connector	
Size / Model	75×120×3 mm
Material	Q235B
Surface treatment & mechanical property	Hot-dip galvanization > 55µm Tensile strength > 375N/mm <sup>2</sup> Yield strength 235N/mm <sup>2</sup>



Inclined support	
Size / Model	U41×41×2 mm
Material	Q235B
Surface treatment & mechanical property	Hot-dip galvanization > 55µm Tensile strength > 375N/mm <sup>2</sup> Yield strength 235N/mm <sup>2</sup>



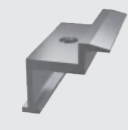
Back support	
Size / Model	L50×3 angle steel
Material	Q235B
Surface treatment & mechanical property	Hot-dip galvanization > 55µm Tensile strength > 375N/mm <sup>2</sup> Yield strength 235N/mm <sup>2</sup>



U shape bolt	
Size / Model	M12
Material	Q235B
Surface treatment & mechanical property	Hot-dip galvanization > 55µm Tensile strength > 375N/mm <sup>2</sup> Yield strength 235N/mm <sup>2</sup>



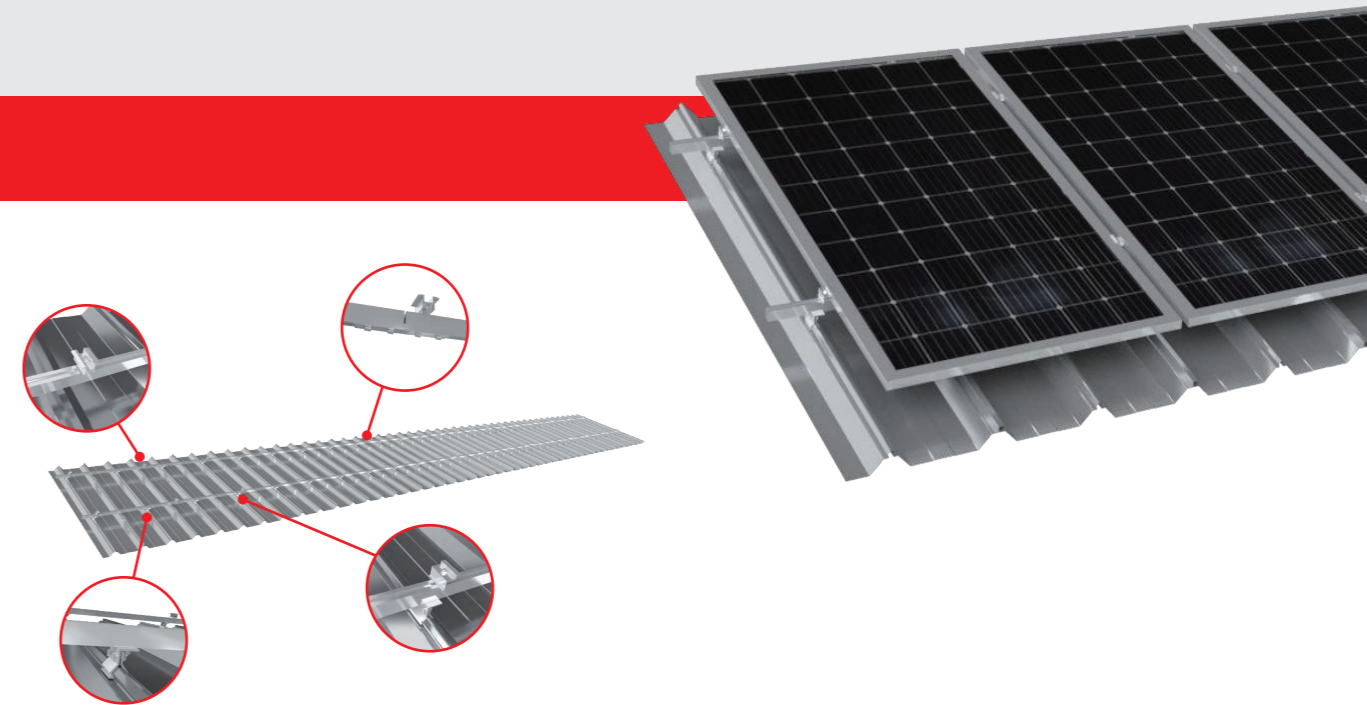
Side block	
Size / Model	H35mm
Material	6005-T5
Surface treatment & mechanical property	Anodization AA15, tensile strength 260N/mm <sup>2</sup>



Medium block	
Size / Model	H35mm
Material	6005-T5
Surface treatment & mechanical property	Anodization AA15, tensile strength 260N/mm <sup>2</sup>



# MOUNTING SYSTEM FOR COLOR STEEL TILE ROOF



## Mounting Components

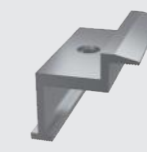
Aluminum alloy rail	
Size / Model	40x30x1.2 mm
Material	6005-T5
Surface treatment and mechanical property	Anodization AA15, tensile strength 260N/mm <sup>2</sup>



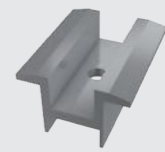
Rail connector	
Size / Model	U35x15x2.0 mm
Material	6005-T5
Surface treatment and mechanical property	Anodization AA15, tensile strength 260N/mm <sup>2</sup>



Side block	
Size / Model	H35mm
Material	6005-T5
Surface treatment and mechanical property	Anodization AA15, tensile strength 260N/mm <sup>2</sup>



Medium block	
Size / Model	H35mm
Material	6005-T5
Surface treatment and mechanical property	Anodization AA15, tensile strength 260N/mm <sup>2</sup>



Vertical fixture	
Size / Model	H60mm
Material	6005-T5
Surface treatment and mechanical property	Anodization AA15, tensile strength 260N/mm <sup>2</sup>



**LESSO Solar Business was founded  
in January 2022.**

**In our first year,  
our solar modules have been used to build  
over 90 projects around the world.**










## Utility Scale Solar Power Station

- A Utility Scale Solar Power Station refers to medium to large scale PV power generation systems, mainly installed in areas such as deserts, barren mountains, wastelands, tidal flats, scrapyards, abandoned mining zones, etc., giving otherwise unusable land a new lease of life. The power generated through these systems can be connected to the power grid through long-distance high-pressure transmission systems.
- The most common applications of Utility Scale Solar Power Stations include ground-mounted power stations on flat lands and mountains, as well as implementations that are complementary with agriculture, aquaculture, as well as forestry industries.
- Almost all implementations of Utility Scale Solar Power Stations are connected to the power grid and are able to generate income by the sale of power at a certain grid purchase price.





### ADVANTAGE

- 
**Inexhaustible**  
 Solar power is everlasting, sustainable and inexhaustible.
- 
**Safe and reliable**  
 Clean energy that is safe and reliable.
- 
**Universally available**  
 Unused rooftops and spare land resources can be intensively utilized.
- 
**No resource consumption**  
 No other fuel or power transmission lines needed. Generate and consume electricity locally.
- 
**Energy efficient set-up**  
 PV panels effectively reduces internal temperature of buildings, saving energy and cost.



## Industrial & Commercial Rooftop Solar Power Station

### ADVANTAGE

- 
**Heat insulation - reduction of building temperature**  
 PV modules convert sunlight irradiation into electricity, and can act as a thermal insulation layer on rooftops to reduce building temperature by 3-4°C.
- 
**Save energy and carbon emissions**  
 Solar power is an inexhaustible source of green energy, and can alleviate urban electricity consumption and relieve power shortage pressure. Besides, by using solar power to reduce carbon emissions, an enterprise can enhance brand image, save energy expenditure and strengthen competitiveness.
- 
**Increase usable floor space**  
 If local authority permits, shed-type Solar power stations, within authorized height limit, can be constructed on the rooftops of industrial and commercial buildings. This frees up floor space for owners to meet other purposes.
- 
**Generate additional profit**  
 Industrial and commercial businesses require high power consumption. By developing and constructing rooftop Solar power stations, businesses can harvest cheap and clean green electricity efficiently and conveniently during the day to save on power bills to save power bills and increase profit. A Solar power station can run safely and efficiently over 25 years, and its ROI is 15% or more.

# PROJECT HIGHLIGHTS

Businesses can use the free electricity generated from PV power stations directly, reducing consumption of electricity from the power grid, thereby enjoying immense savings on their electrical bill. If applicable, a PV power station can even be connected to the power grid, allowing businesses to sell excess electricity to the grid to generate additional profit.



**Foshan Haitian Roof Solar Power Station**

**Location:** Shunde, Foshan, China  
**Project Capacity:** 6.14MW



**Dingan Roof Solar Power Station**

**Location:** Dingan, Hainan, China  
**Project Capacity:** 6MW



**Ducheng Roof Solar Power Station**

**Location:** Yunan, Yunfu, China  
**Project Capacity:** 5MW



**Mulingke Roof Solar Power Station**

**Location:** Mudanjiang, Heilongjiang, China  
**Project Capacity:** 0.8MW



**Karamay Desert Solar Power Station (Phase I)**

**Project Capacity**  
**600MW**

**Location:** Karamay, Xinjiang, China



**Changsha Roof Solar Power Station**

**Project Capacity**  
**9.75MW**

**Location:** Changsha, Hunan, China



Application example of  
Pure Black series PV module

## Residential Solar Power Station

### ADVANTAGE



#### Increase usable floor space

If local authority permits, shed-type solar power stations, within authorized height limit, can be constructed on the rooftop of residential houses. This frees up floor space for owners to meet other purposes.



#### Heat insulation - reduction of building temperature

PV modules on rooftops can absorb sunshine and heat and play as a thermal insulation layer over rooftop to reduce building temperature by 3-6°C, especially in summer. Meanwhile, PV panels will protect rooftops and help delay signs of aging.



#### Prevent damage and delay aging of rooftops

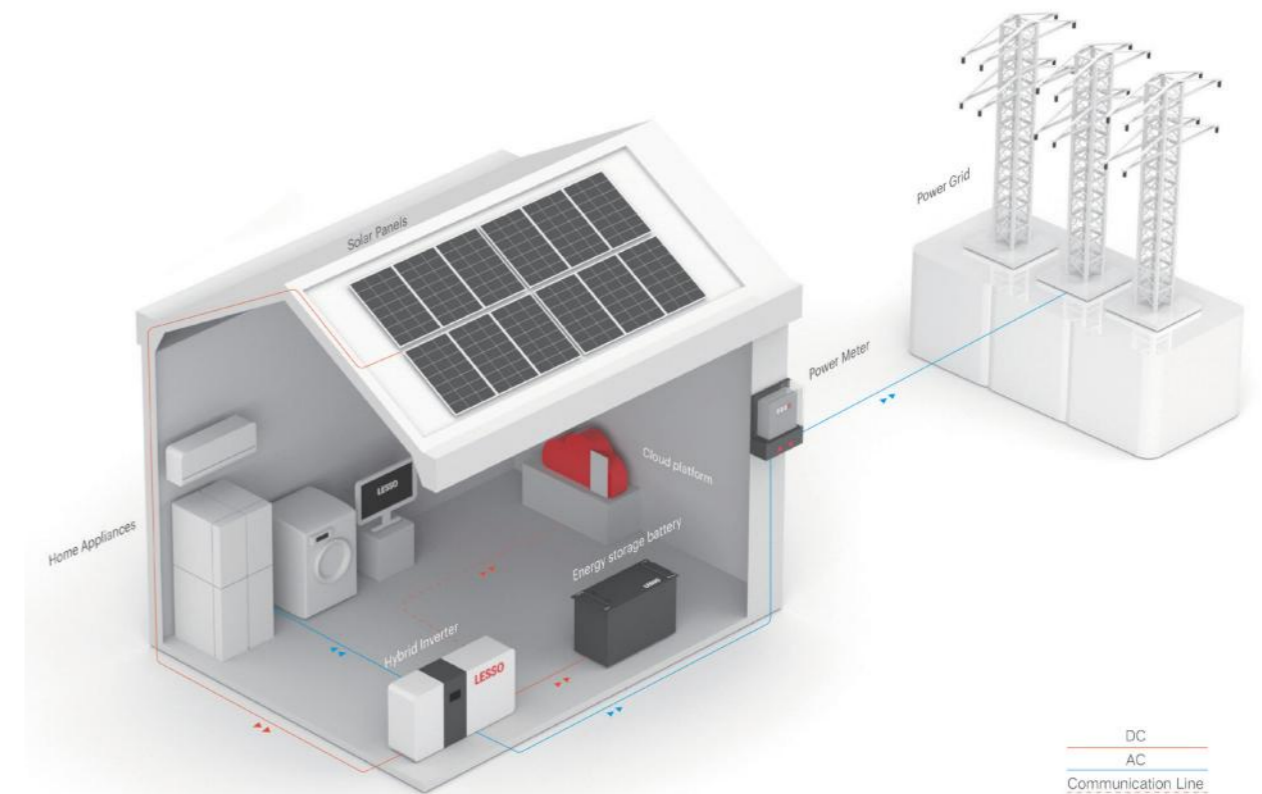
PV panels can protect rooftops by reducing the exposure to sun and heavy rain, and thus prolong the life span and maintain the value of the building.



#### Triple lightning protection

With the built-in triple lightning protection system, solar power station is safe and able to protect family, rooftop and home appliances in the building from lightning damage.

### Illustration of Residential On-Grid Solar Power System





## Agriculture-complementary Solar Power Station

**Agriculture-complementary Solar power station** is a new development that combines Solar power stations constructed on top of greenhouses or pillars with agricultural plantations under it.

By constructing agriculture-complementary Solar power stations, clean energy can be generated and connected to the power grid. Meanwhile, high-tech farming methods can be implemented, thus intensively utilizing sunshine and land resources, improving their values and profits. This new method produces no pollution or emissions and doesn't occupy farmland.

### Mode of Operation:

PV power generation on the top of the shed, vegetables are planted in the shed, and the power can be used not only by the shed, but also connected to the public power grid to sell electricity and get new energy subsidy.



## Aquaculture-complementary Solar Power Station



**Aquaculture-complementary Solar power station** is a combination of Solar power station and aquaculture. In this combined mode, PV panels are installed over fish ponds, which can offer shelter and shade and maintain the temperature and oxygen content of the pond, so as to increase aquaculture productivity.

Aquaculture-complementary Solar power station is a good example of efficient land utilization and clean energy generation. By combining PV power generation and aquaculture above and in the fish ponds, lands are utilized more efficiently and can produce more social and economical profits.