

Tongwei Co., Ltd.

No. 588, Tianfu Avenue, High-tech Zone, Chengdu City, Sichuan Province, China.

Post code: 610000

E-mail address: sale01@tongwei.com

Official website: <http://en.tw-solar.com/>



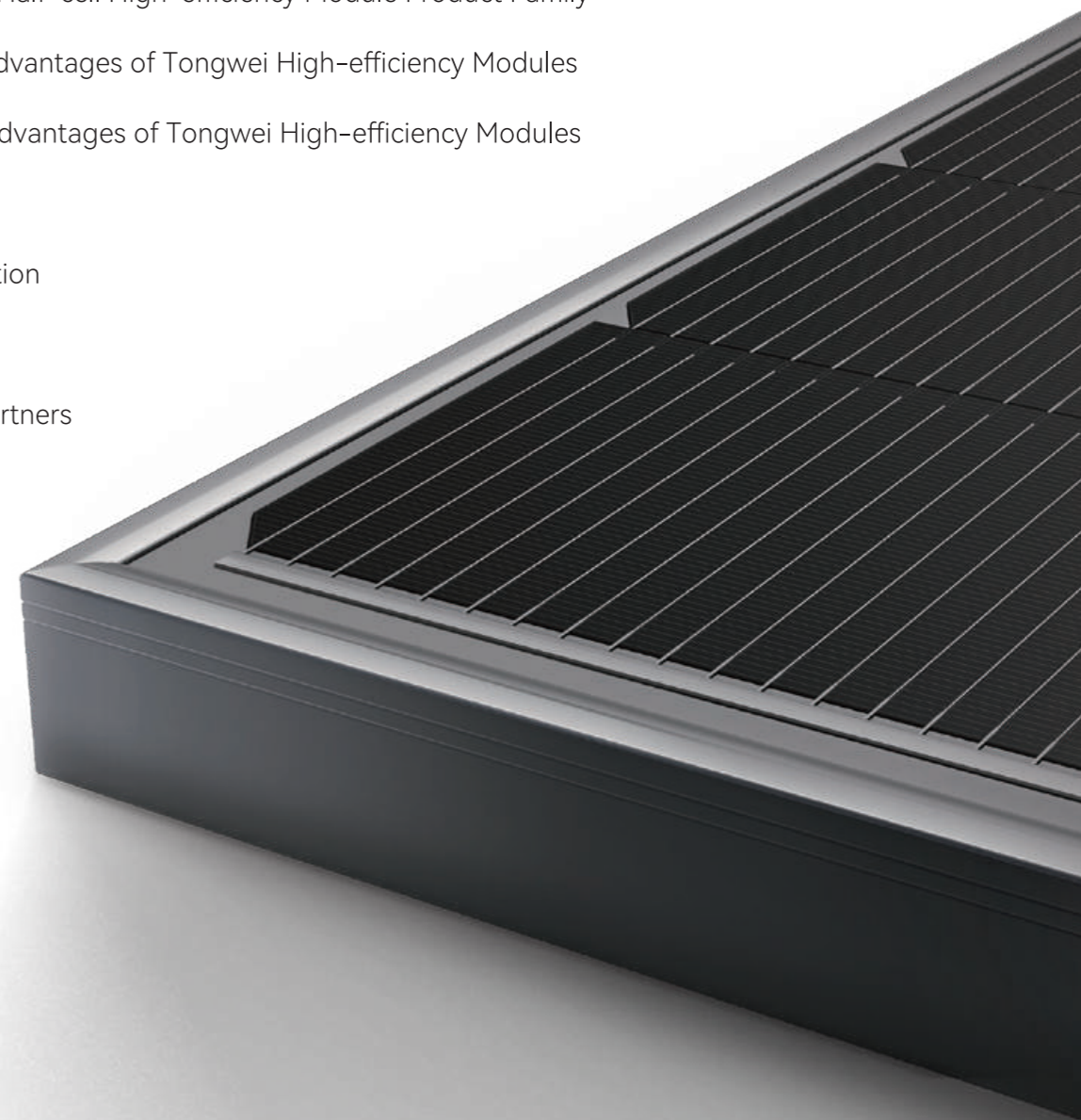




TW SOLAR

Content

01-02	Tongwei PV Industry Integration
03-04	Global Layout
05-06	R&D Strength
07-08	Tongwei PV Products
09-10	Tongwei Half-cell High-efficiency Module Product Family
11-12	Design Advantages of Tongwei High-efficiency Modules
13-14	System Advantages of Tongwei High-efficiency Modules
15-38	Specification
39-40	Global Partners



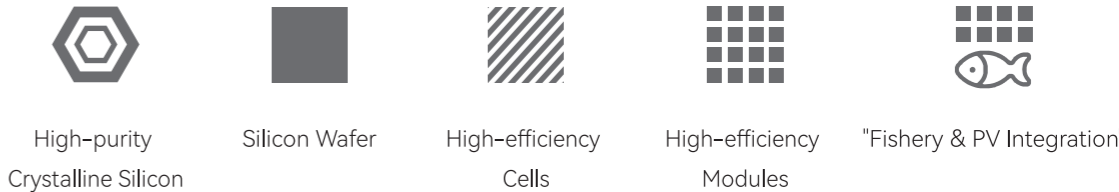


Tongwei PV Industry Integration

Tongwei entered the market of photovoltaics (PV) in 2006. After more than 10 years of rapid development, Tongwei has become an integrated PV enterprise with high-purity polysilicon production in upstream and high-efficiency solar cell production and high-efficiency PV module production in midstream, as well as experience in PV power plant construction and operation in downstream. It has formed a complete PV new energy industry chain with independent intellectual property rights and leading scale, technology, cost, and quality advantages, building up the vertically integrated layout of the whole PV industry chain. Tongwei continues to strengthen and enlarge its advantages, focusing on the layout of high-purity crystalline silicon, high-efficiency cells, and module products on the manufacturing side and on building a "Fishery & PV Integration" innovative development model on the application side. Tongwei has become an important participant and significant driving force for the development of China and even the global photovoltaic new energy industry.

TW Solar, as the most critical link in Tongwei's PV new energy industry chain, has deeply engaged in the R&D, manufacturing, and promotion of core solar power generation products and has become the world's largest manufacturer of crystalline silicon solar cell and high-efficiency modules with the most advanced technology, production equipment, and the highest level of automation and intelligence in the PV industry. TW Solar has formed a series of fully-flexible, zero-lead, eco-friendly shingled modules and high-efficiency half-cell modules that bring less LCOE (Levelized Cost Of Electricity) for customers at terminal power stations and cover the diverse needs of global customers. With over 20,000 employees on its payroll, TW Solar now has six bases in Hefei, Shuangliu, Meishan, Jintang, Yancheng, Nantong, and the Tonghe project, with an annual cell capacity of 70GW and an expected 130-150GW in 2024-2026, of which large-size cell capacity will account for more than 90%. It is seeing an annual capacity of high-efficiency modules of 14GW and is estimated to reach 80GW by the end of 2023.

Tongwei modules adopt the mainstream P-Type TPC cells and the more efficient N-Type TNC cells and THC cells, whose sizes cover the popular M10 and G12 series. Tongwei modules are widely used in scenarios such as household rooftops, industrial and commercial factories, and ground power plants, providing end customers with comprehensive product solutions.



Global Layout



Destinations of Module Exporting

- Europe**
 - Albania
 - Romania
 - Ireland
 - Malta
 - Austria
 - Portugal
 - Bulgaria
 - Sweden
 - Belgium
 - Switzerland
 - Poland
 - Slovenia
 - Bosnia
 - Turkey
 - Herzegovina
 - Ukraine
 - Germany
 - Spain
 - Russia
 - Greece
 - France
 - Hungary
 - Finland
 - Italy
 - Netherlands
 - United Kingdom
 - Croatia

- Asia**
 - Pakistan
 - Georgia
 - South Korea
 - Lebanon
 - Malaysia
 - Japan
 - Cyprus
 - Saudi Arabia
 - Singapore
 - Yemen
 - Jordan
 - Vietnam

- America**
 - Brazil
 - Dominica
 - Mexico
 - Chile

- Oceania**
 - Australia
 - Fiji
 - New Zealand

Silicon Material Bases

- Yongxiang Polysilicon
- Yongxiang New Energy
- Tongwei Inner Mongolia
- Tongwei Yunnan

Cell and Module Bases

- Hefei Base (Anhui)
- Chengdu Base (Sichuan)
- Jintang Base (Sichuan)
- Meishan Base (Sichuan)
- Yancheng Base (Jiangsu)
- Nantong Base (Jiangsu)
- Tonghe New Energy (Sichuan)

R&D Strength



PV Technology R&D Layout

- Shuangliu District, Chengdu, Sichuan Province**
 Heterojunction(HJT) Cell Pilot Line
 Total Interdigitated Back Contact Cell Pilot Line
 Advanced Metallization Test Line
 Module R&D Pilot Line
 Perovskite Lamination Lab
 PV Testing Center
- Jintang County, Chengdu, Sichuan Province**
 1GW Heterojunction (HJT) Production Line
 Slicing R&D Line
- Meishan, Sichuan Province**
 TOPCon Cell R&D Line
- Leshan, Sichuan Province**
 Yongxiang Silicon Material R&D Center
 Crystal Growth R&D line
- Hefei, Anhui Province**
 Heterojunction (HJT) Cell Pilot Line
 Module R&D center
 Outdoor Module Demonstration Base
- Yancheng, Jiangsu Province**
 High-efficiency Module Production Base

PV Technology R&D Intellectual Property Rights

1484 Authorized Patents (As of 2022)
 National Advanced Intellectual Property Enterprise
 China Patent Award Excellence Award
 First Prize of Sichuan Patent Award

Technology R&D Strength on High-Purity Crystalline Silicon

Circular Economy Industry Chain:
 Tail Gas Recovery, High-Efficiency Reduction
 Energy-saving Distillation, Anti-disproportionation
 Closed-loop Cycle of Oxygen and Hydrogen Elements
 Trichlorosilane Synthesis, Cold Hydrogenation
 Thermal Energy Cascade Recycling

Electronic Grade Parameters: 100%
 Super-efficient Applicable: N-Type
 Technical Reserve: Semiconductor

Technology R&D Strength on Cell

The World's First Industrial 4.0 High-efficiency Cell Production Line

"Tongwei Speed": fully automatic production line
 "China Speed": 30% energy consumption
 "Global Speed": 161% production efficiency

Qualifications of PV Technology R&D Platforms

State-certificated Enterprise Technology Center
 Sichuan Engineering Technology Research Center
 Sichuan Engineering Research Center
 Chengdu PV Testing Center (CNAS Accreditation)
 Hefei PV Experimental Center (CNAS Accreditation)

Tongwei PV Products

High-purity Crystalline Silicon

To build a leading world-class enterprise of high-purity crystalline silicon

Purity of 99.99999999%, higher than the national standard



Crystalline Silicon Cells

Products made by the "Industry 4.0" intelligent manufacturing system

TNC Cells:

The self-developed, industry-leading PECVD polysilicon deposition technology route is adopted. Average conversion efficiency exceeds 24.7%, and the module power reaches **690W**

THC Cells:

The highest R&D efficiency has reached 25.67% (ISFH Accreditation). The R&D of cutting-edge technologies such as total interdigitated back contact cells (TIC), and perovskite/silicon stacked cells have been carried out.



High-efficiency Modules

Fully covered with TW Solar (half-cell/shingled) module products

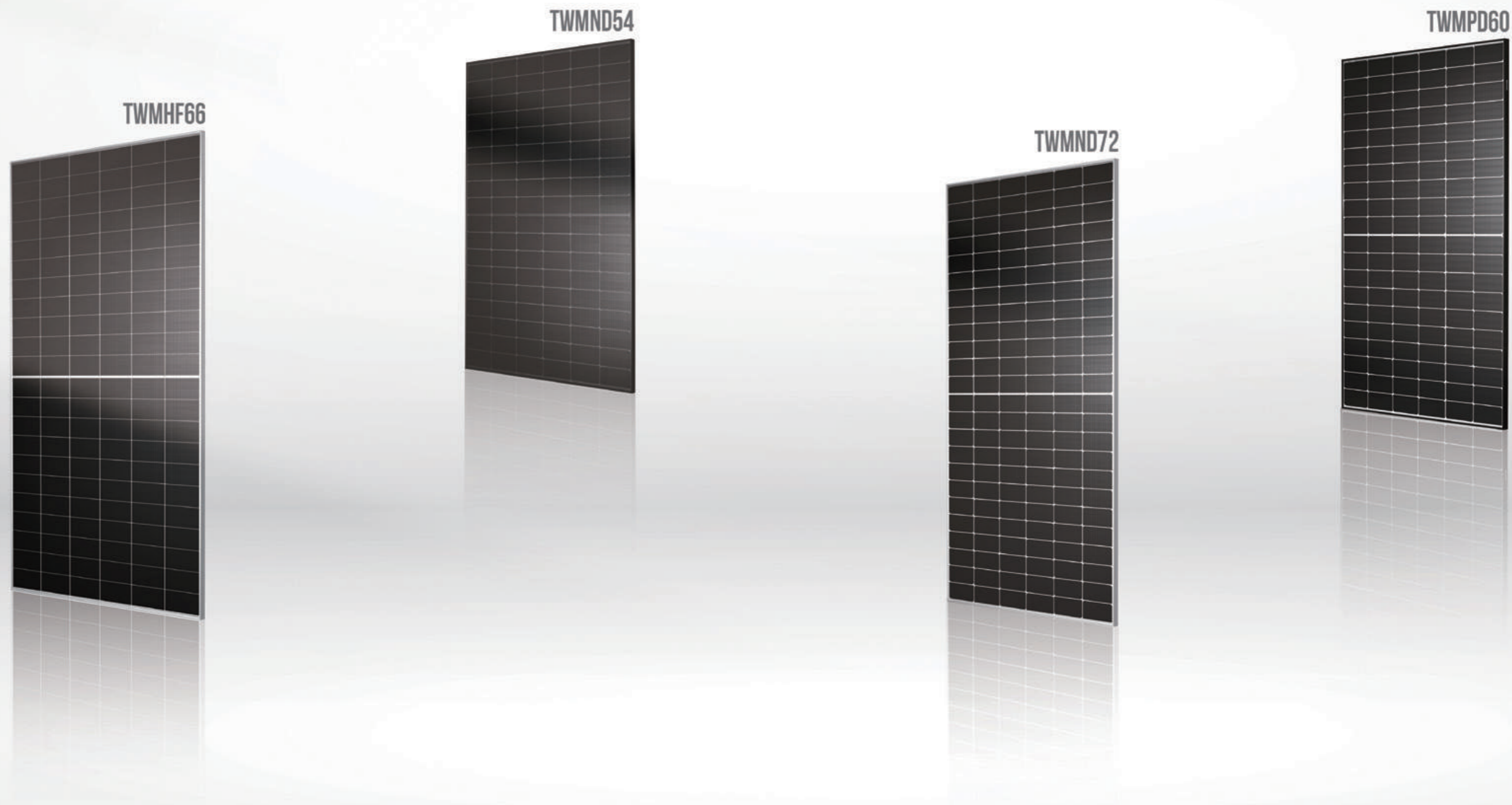


Fishery & PV Integration

The world's first "Fishery & PV Integration" innovative development mode that can achieve triple harvest of "fishery, electricity, and environmental protection"



Tongwei Half-cell High-efficiency Module Product Family



Design Advantages of Tongwei High-efficiency Modules

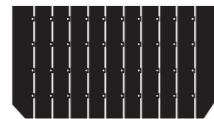
Multi-busbar (MBB) and Super multi-busbar (SMBB) design

Decreasing series and increasing energy, dense line and decreasing loss

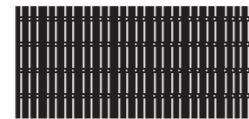
Dense grid lines, even stress; Improving the cell's current collecting ability for the reduction of loss and raising the cell's output power to at least 5W higher than that of conventional cells.



Conventional cell



Multi-busbar (MBB) cell



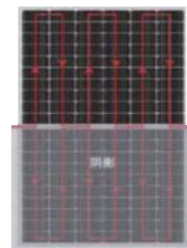
Super Multi-busbar (SMBB) cell

Serial and parallel design, shading, without lowering output

Up-down symmetrical parallel module design featuring the series-parallel connection effectively reduces current mismatch due to shading and the output power loss of the whole module. As shown in the shading instance below, the power output is raised to 50%.



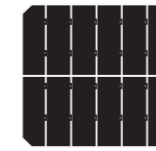
Full-cell~ 0 power output



Half-cell~50% power output

Half-cell cutting - lower the current and loss

Current density is reduced by 1/2, internal power loss is reduced to 1/4 of conventional modules, and the rated output power is increased by 5~10w. Also, the risk of hot spots in the outdoor operation is effectively decreased.



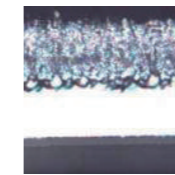
$$P=I^2R$$



$$P=(I/2)^2R$$

Lossless cutting

Lossless laser cutting technology and no mechanical damage effectively reduce the risk of cracking in manufacturing. Micro-cracking is reduced by more than 50%, ensuring the long and reliable outdoor operation of modules.



Lossy cutting



Lossless laser cutting

High-Density Encapsulation Technology

Adopting advanced high-density encapsulation technology to improve the utilization rate of module surfaces and to ensure the perfect balance of efficiency and reliability. Module efficiency is increased by more than 0.15%.

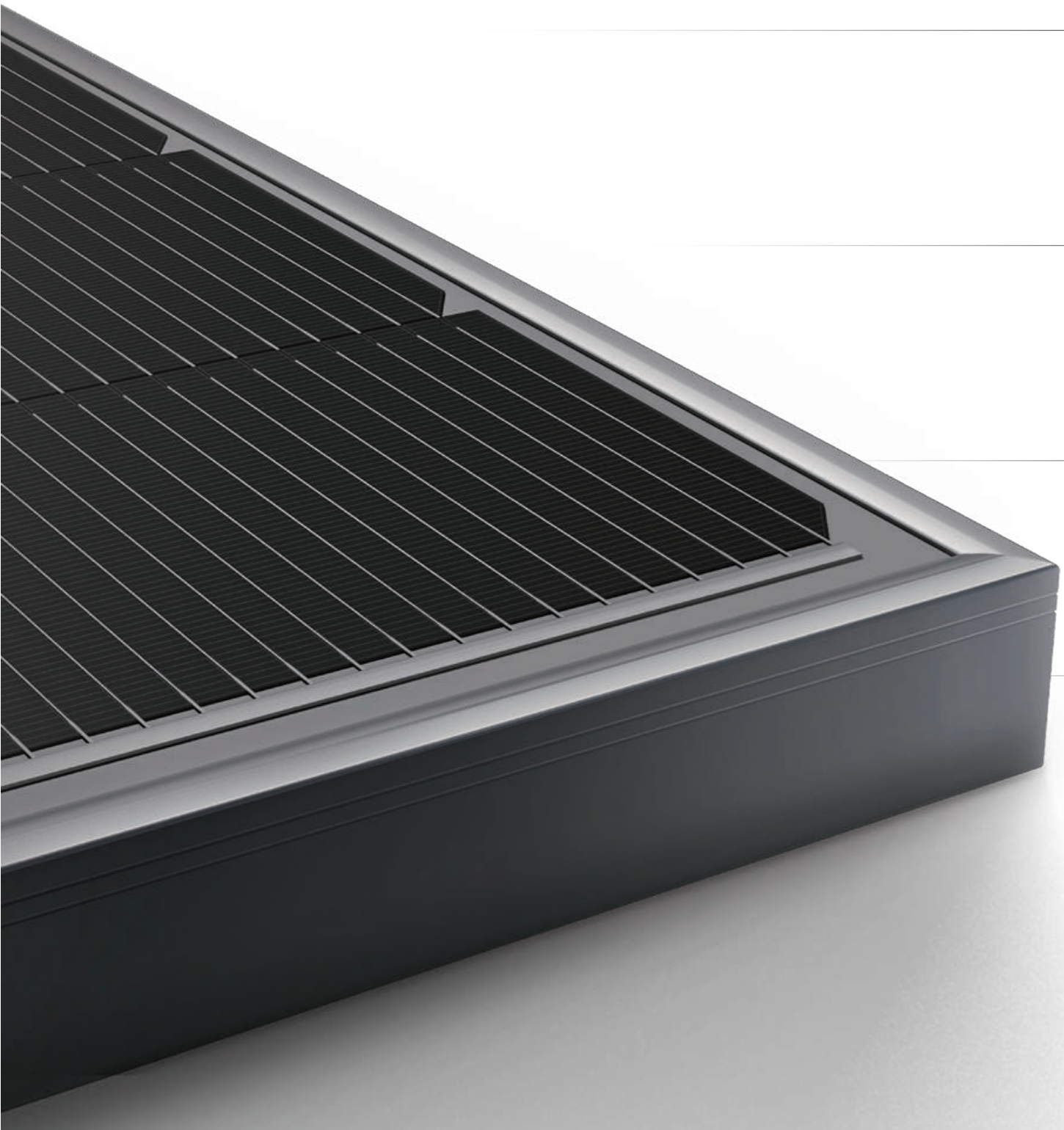


Regular spacing



Small spacing: high density

System Advantages of Tongwei High-efficiency Modules



Lower Operating Temperature

The outdoor temperature range of half-cell module is 2-3°C lower than that of conventional modules, and the power output increases by more than 0.5% under the same conditions.



Superior Surface Loading Capacity

The overall module passed 2400Pa wind load and 5400Pa snow load tests



Higher Conversion Efficiency

With the outstanding cell technology and leading processing techniques, the conversion efficiency of TNC high-efficiency module is more than 22.0%



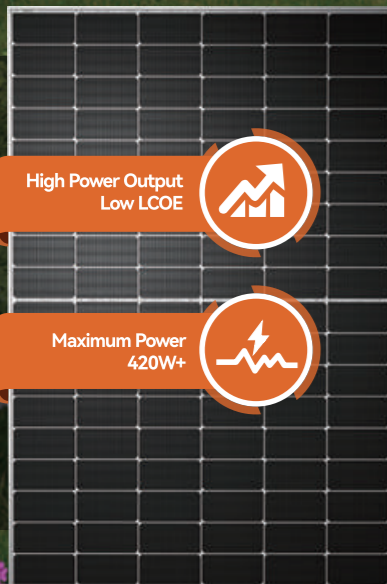
Excellent Low-light Performance

TNC high-efficiency module outputs more power in low-light conditions such as cloudy, morning, and evening situations



Excellent Anti-PID Performance

Possibilities of degradation caused by PID is minimized by optimization of cell production technology and material management



TWMPD

P-type Half-cell Monofacial Module (54)

54HS400-420W

High Power Output
Low LCOE



Maximum Power
420W+



www.tw-solar.com



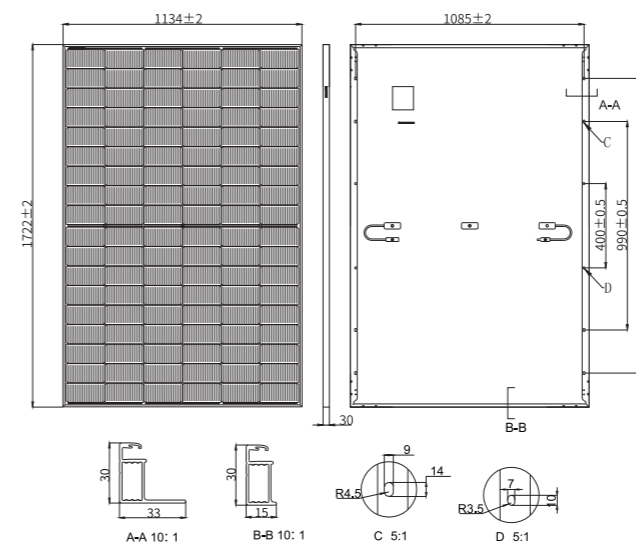
Learn More



TWMPD P-type Half-cell Monofacial Module (54)

54HS400-420W

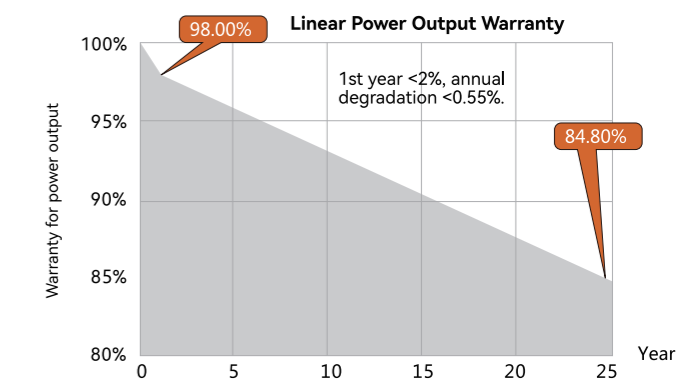
DRAWINGS (Unit: mm)



MECHANICAL PARAMETERS

Cells	TPC (P Type Monocrystalline Cell)
Cell Orientation	108[6X18]
Dimension	1722±2 X1134±2X30mm
Weight	20.5kg
Front Glass	3.2mm high transmittance, AR coated tempered glass
Backsheet	White
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm or ±1200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	36pcs per pallet, 936pcs per 40'HC

WARRANTY



ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMPD-54HSXXX					
Maximum Power: Pmax [W]	400	405	410	415	420
Open Circuit Voltage: Voc [V]	37.08	37.23	37.38	37.53	37.68
Short Circuit Current: Isc [A]	13.77	13.87	13.92	13.95	13.98
Voltage at Maximum Power: Vmp [V]	30.58	30.73	30.88	31.03	31.18
Current at Maximum Power: Imp [A]	13.08	13.18	13.28	13.38	13.47
Module Efficiency: η [%]	20.5	20.7	21.0	21.3	21.5

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	302.8	306.6	310.3	314.1	317.9
Open Circuit Voltage: Voc [V]	34.72	34.86	35.00	35.15	35.29
Short Circuit Current: Isc [A]	10.82	10.90	10.97	11.05	11.12
Voltage at Maximum Power: Vmp [V]	28.76	28.90	29.04	29.18	29.32
Current at Maximum Power: Imp [A]	10.52	10.60	10.68	10.76	10.84

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass1.5, Measuring Tolerance: ±3%
* NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s

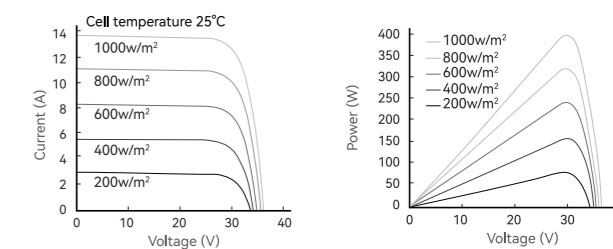
TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.34%/°C
Temperature Coefficient (Voc)	-0.27%/°C
Temperature Coefficient (Isc)	+0.045%/°C
NMOT	45±2°C

MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Power Output Tolerance	0~+5W

I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification

- ISO 9001:2015 / quality management system
- ISO 14001:2015 / environmental management system
- ISO 45001:2018 / occupation health safety management system
- ISO 50001:2011 / energy management system
- IEC TS 62941—2016 / PV industry quality management system
- IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt), IEC 62716 (Ammonia), IEC 60068-2-68(Sand)



Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers. TW Solar reserves the final right of interpretation.



High Power Output
Low LCOE

Maximum Power
415W+

TWMPD

P-type Half-cell Monofacial Full-black Module (54)

54HB395-415W

www.tw-solar.com

Residential Rooftop

12 YEAR Materials Warranty

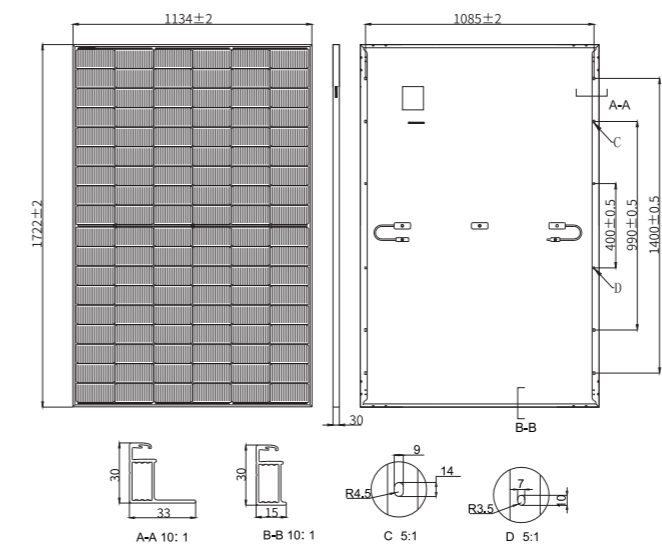
25 YEAR Power Warranty



TWMPD P-type Half-cell Monofacial Full-black Module (54)

54HB395-415W

DRAWINGS (Unit: mm)



ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMPD-54HBXXX					
Maximum Power: Pmax [W]	395	400	405	410	415
Open Circuit Voltage: Voc [V]	36.98	37.07	37.23	37.38	37.53
Short Circuit Current: Isc [A]	13.70	13.79	13.87	13.93	13.99
Voltage at Maximum Power: Vmp [V]	30.84	31.01	31.21	31.40	31.60
Current at Maximum Power: Imp [A]	12.81	12.90	12.98	13.06	13.14
Module Efficiency: η [%]	20.2	20.5	20.7	21.0	21.3

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	298.2	302.0	306.0	310.0	314.0
Open Circuit Voltage: Voc [V]	34.80	34.88	35.12	35.31	35.50
Short Circuit Current: Isc [A]	10.96	11.03	11.10	11.16	11.22
Voltage at Maximum Power: Vmp [V]	29.10	29.26	29.47	29.68	29.89
Current at Maximum Power: Imp [A]	10.25	10.32	10.38	10.44	10.51

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5, Measuring Tolerance: ±3%
* NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass 1.5, Wind Speed 1m/s

TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.34%/°C
Temperature Coefficient (Voc)	-0.27%/°C
Temperature Coefficient (Isc)	+0.045%/°C
NMOT	45±2°C

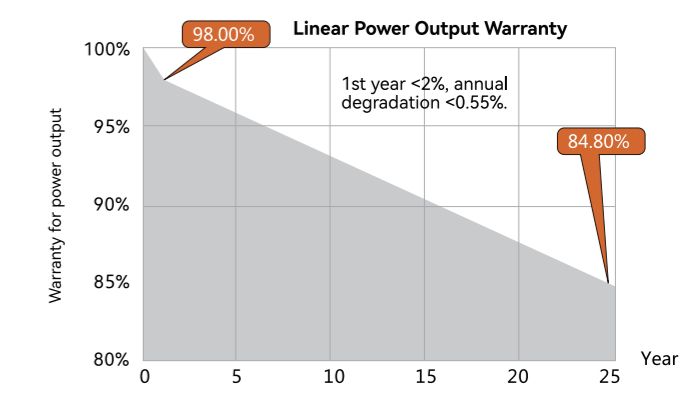
MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Power Output Tolerance	0~+5W

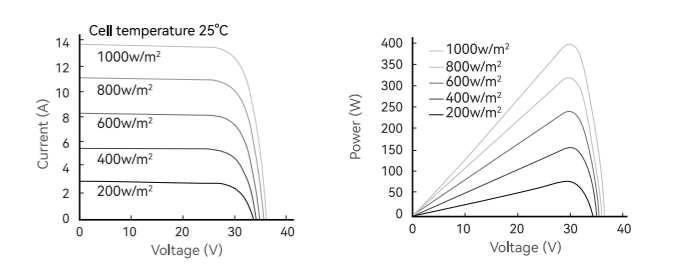
MECHANICAL PARAMETERS

Cells	TPC (P Type Monocrystalline Cell)
Cell Orientation	108[6X18]
Dimension	1722±2 X1134±2X30mm
Weight	20.5kg
Front Glass	3.2mm high transmittance, AR coated tempered glass
Backsheet	Black inside and white outside
Frame	Anodized aluminum alloy black frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm or ±1200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	36pcs per pallet, 936pcs per 40'HC

WARRANTY



I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification

- ISO 9001:2015 / quality management system
- ISO 14001:2015 / environmental management system
- ISO 45001:2018 / occupation health safety management system
- ISO 50001:2011 / energy management system
- IEC TS 62941—2016 / PV industry quality management system
- IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt), IEC 62716 (Ammonia), IEC 60068-2-68(Sand)

Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers. TW Solar reserves the final right of interpretation.



TWMND

N-type Half-cell Monofacial Module (54)

54HS420-440W

www.tw-solar.com

- High Power Output
Low LCOE
- Maximum Power
440W+

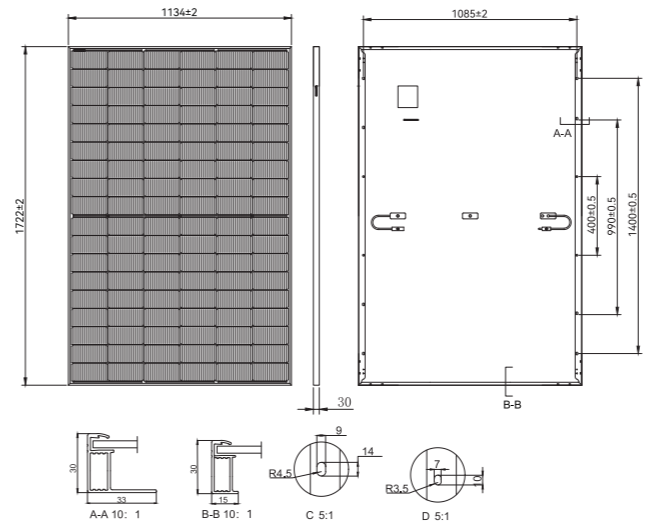
- Residential Rooftop
- 12 YEAR Materials Warranty
- 30 YEAR Power Warranty



TWMND N-type Half-cell Monofacial Module (54)

54HS420-440W

DRAWINGS (Unit: mm)



ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMND-54HSXXX	420	425	430	435	440
Maximum Power: Pmax [W]	420	425	430	435	440
Open Circuit Voltage: Voc [V]	38.85	39.00	39.15	39.30	39.45
Short Circuit Current: Isc [A]	13.57	13.62	13.67	13.72	13.77
Voltage at Maximum Power: Vmp [V]	32.92	33.09	33.26	33.43	33.60
Current at Maximum Power: Imp [A]	12.76	12.85	12.93	13.01	13.10
Module Efficiency: η [%]	21.5	21.8	22.0	22.3	22.5

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	316.0	320.0	324.0	327.8	331.8
Open Circuit Voltage: Voc [V]	36.89	37.04	37.19	37.33	37.47
Short Circuit Current: Isc [A]	10.90	10.96	11.02	11.06	11.10
Voltage at Maximum Power: Vmp [V]	30.64	30.81	30.98	31.14	31.30
Current at Maximum Power: Imp [A]	10.31	10.39	10.46	10.52	10.60

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5, Measuring Tolerance: ±3%
* NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass 1.5, Wind Speed 1m/s

TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.30%/°C
Temperature Coefficient (Voc)	-0.25%/°C
Temperature Coefficient (Isc)	+0.046%/°C
NMOT	45±2°C

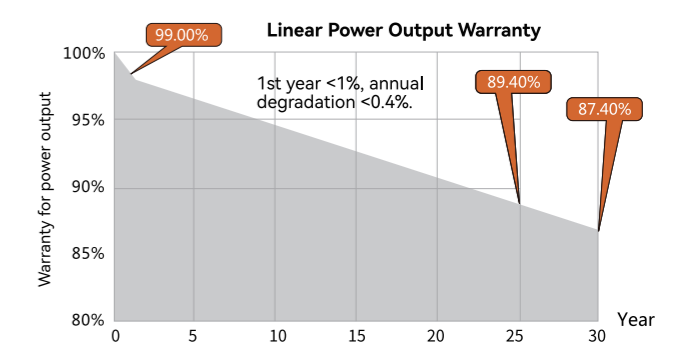
MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Power Output Tolerance	0~+5W

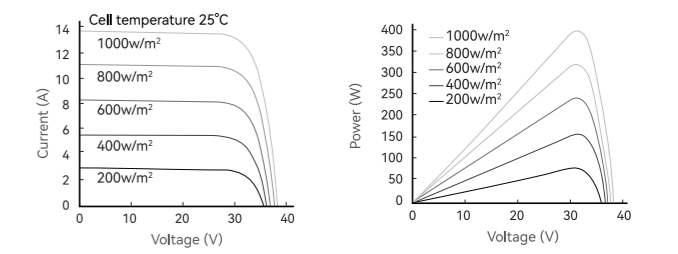
MECHANICAL PARAMETERS

Cells	TNC (N Type Monocrystalline Cell)
Cell Orientation	108[6X18]
Dimension	1722±2 X 1134±2X30mm
Weight	20.5kg
Front Glass	3.2mm high transmittance, AR semi-tempered glass
Backsheet	White
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm or ±1200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	36pcs per pallet, 936pcs per 40'HC

WARRANTY



I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification
 ISO 9001:2015 / quality management system
 ISO 14001:2015 / environmental management system
 ISO 45001:2018 / occupation health safety management system
 ISO 50001:2011 / energy management system
 IEC TS 62941—2016 / PV industry quality management system
 IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt),
 IEC 62716 (Ammonia), IEC 60068-2-68(Sand)



Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers. TW Solar reserves the final right of interpretation.



High Power Output
Low LCOE

Maximum Power
435W+

TWMND

N-type Half-cell
Monofacial Full-black Module (54)

54HB415-435W

www.tw-solar.com

Certisolar

TIER 1
Bloomberg
NEW ENERGY FINANCIAL

Residential Rooftop

12
YEAR
Materials
Warranty

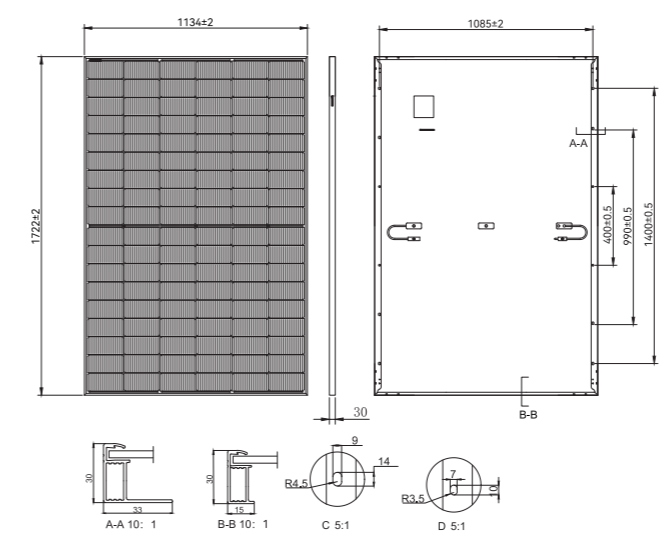
30
YEAR
Power
Warranty



TWMND N-type Half-cell Monofacial Full-black Module (54)

54HB415-435W

DRAWINGS (Unit: mm)



ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMND-54HBXXX

Maximum Power: Pmax [W]	415	420	425	430	435
Open Circuit Voltage: Voc [V]	38.70	38.85	39.00	39.15	39.30
Short Circuit Current: Isc [A]	13.52	13.57	13.62	13.67	13.72
Voltage at Maximum Power: Vmp [V]	32.75	32.92	33.09	33.26	33.43
Current at Maximum Power: Imp [A]	12.67	12.76	12.85	12.93	13.01
Module Efficiency: η [%]	21.3	21.5	21.8	22.0	22.3

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	312.0	316.0	320.0	324.0	327.8
Open Circuit Voltage: Voc [V]	36.73	36.89	37.04	37.19	37.33
Short Circuit Current: Isc [A]	10.84	10.90	10.96	11.02	11.06
Voltage at Maximum Power: Vmp [V]	30.47	30.64	30.81	30.98	31.14
Current at Maximum Power: Imp [A]	10.24	10.31	10.39	10.46	10.52

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5, Measuring Tolerance: ±3%
* NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass 1.5, Wind Speed 1m/s

TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.30%/°C
Temperature Coefficient (Voc)	-0.25%/°C
Temperature Coefficient (Isc)	+0.046%/°C
NMOT	45±2°C

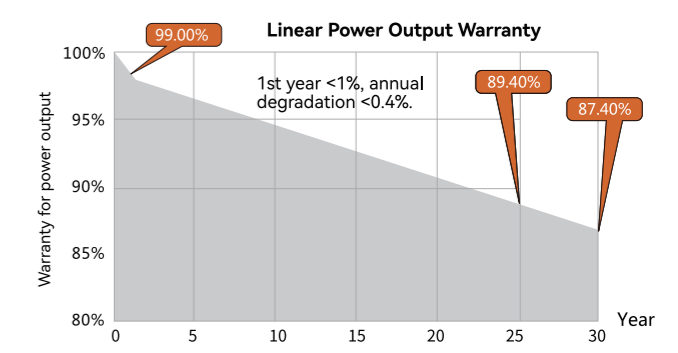
MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Power Output Tolerance	0~+5W

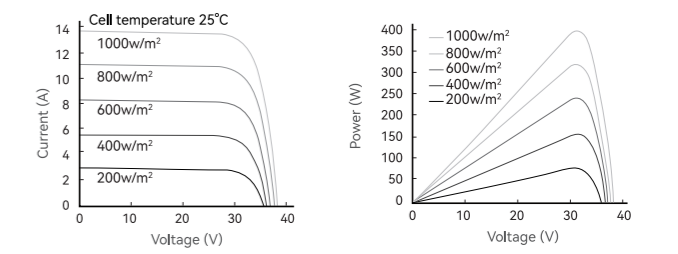
MECHANICAL PARAMETERS

Cells	TNC (N Type Monocrystalline Cell)
Cell Orientation	108[6X18]
Dimension	1722±2 X 1134±2X30mm
Weight	20.5kg
Front Glass	3.2mm high transmittance, AR coated tempered glass
Backsheet	Black inside and white outside
Frame	Anodized aluminum alloy black frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm or ±1200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	36pcs per pallet, 936pcs per 40'HC

WARRANTY



I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification

ISO 9001:2015 / quality management system
ISO 14001:2015 / environmental management system
ISO 45001:2018 / occupation health safety management system
ISO 50001:2011 / energy management system
IEC TS 62941—2016 / PV industry quality management system
IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt), IEC 62716 (Ammonia), IEC 60068-2-68(Sand)



Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers. TW Solar reserves the final right of interpretation.



High Power Output
Low LCOE

Maximum Power
465W+

TWMPD

P-type Half-cell Monofacial Module (60)

60HS445-465W

www.tw-solar.com

Residential Rooftop

12 YEAR Materials Warranty

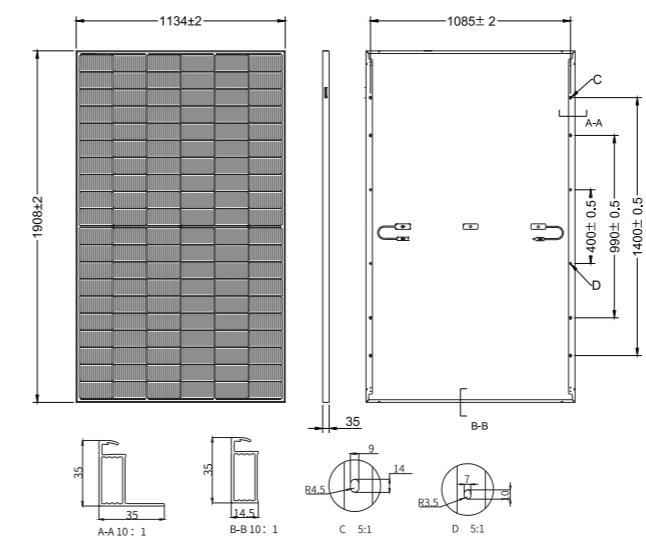
25 YEAR Power Warranty



TWMPD P-type Half-cell Monofacial Module (60)

60HS445-465W

DRAWINGS (Unit: mm)



ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMPD-60HSXXX					
Maximum Power: Pmax [W]	445	450	455	460	465
Open Circuit Voltage: Voc [V]	41.04	41.21	41.38	41.55	41.72
Short Circuit Current: Isc [A]	13.79	13.84	13.89	13.94	13.99
Voltage at Maximum Power: Vmp [V]	33.67	33.83	33.99	34.15	34.31
Current at Maximum Power: Imp [A]	13.22	13.30	13.39	13.47	13.55
Module Efficiency: η [%]	20.6	20.8	21.0	21.3	21.5

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	336.7	340.5	344.3	348.1	351.9
Open Circuit Voltage: Voc [V]	38.93	39.11	39.30	39.49	39.68
Short Circuit Current: Isc [A]	10.88	10.91	10.95	10.97	11.01
Voltage at Maximum Power: Vmp [V]	32.15	32.37	32.59	32.81	33.02
Current at Maximum Power: Imp [A]	10.47	10.52	10.56	10.61	10.65

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5, Measuring Tolerance: ±3%
 * NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass 1.5, Wind Speed 1m/s

TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.34%/°C
Temperature Coefficient (Voc)	-0.27%/°C
Temperature Coefficient (Isc)	+0.045%/°C
NMOT	45±2°C

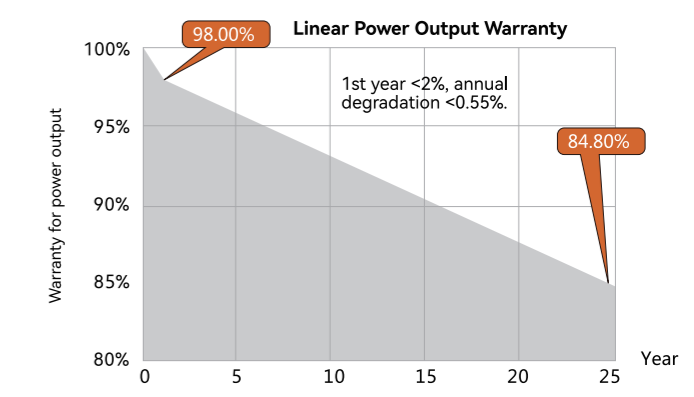
MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Power Output Tolerance	0~+5W

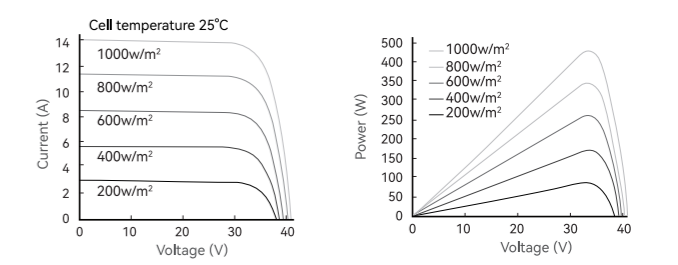
MECHANICAL PARAMETERS

Cells	TPC (P Type Monocrystalline Cell)
Cell Orientation	120[6X20]
Dimension	1908±2 X1134±2X35mm
Weight	24.2kg
Front Glass	3.2mm high transmittance, AR coated tempered glass
Backsheet	White
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	±1200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	31pcs per pallet, 744pcs per 40'HC

WARRANTY



I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification

- ISO 9001:2015 / quality management system
- ISO 14001:2015 / environmental management system
- ISO 45001:2018 / occupation health safety management system
- ISO 50001:2011 / energy management system
- IEC TS 62941—2016 / PV industry quality management system
- IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt), IEC 62716 (Ammonia), IEC 60068-2-68(Sand)

Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

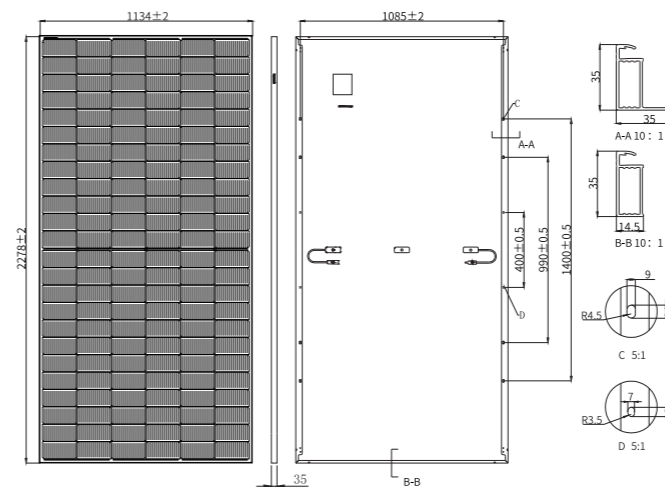
Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers. TW Solar reserves the final right of interpretation.



TWMPD P-type Half-cell Monofacial Module (72)

72HS545-565W

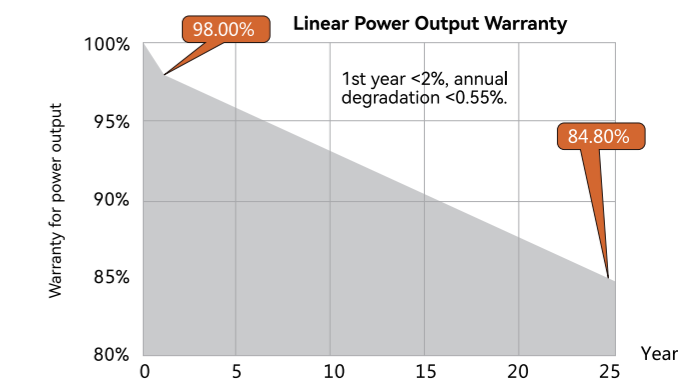
DRAWINGS (Unit: mm)



MECHANICAL PARAMETERS

Cells	TPC (P Type Monocrystalline Cell)
Cell Orientation	144[6X24]
Dimension	2278±2 X1134±2X35mm
Weight	27.8kg
Front Glass	3.2mm high transmittance, AR coated tempered glass
Backsheet	White
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm or ±1400mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	31pcs per pallet, 620pcs per 40'HC

WARRANTY



ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMPD-72HSXXX					
Maximum Power: Pmax [W]	545	550	555	560	565
Open Circuit Voltage: Voc [V]	49.71	49.91	50.11	50.31	50.51
Short Circuit Current: Isc [A]	13.88	13.92	13.96	14.00	14.04
Voltage at Maximum Power: Vmp [V]	41.05	41.25	41.45	41.65	41.85
Current at Maximum Power: Imp [A]	13.28	13.33	13.39	13.45	13.51
Module Efficiency: η [%]	21.1	21.3	21.5	21.7	21.9

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	412.4	416.2	420.0	423.8	427.6
Open Circuit Voltage: Voc [V]	47.18	47.40	47.62	47.85	48.04
Short Circuit Current: Isc [A]	10.94	10.97	10.99	11.02	11.05
Voltage at Maximum Power: Vmp [V]	39.28	39.55	39.82	40.09	40.28
Current at Maximum Power: Imp [A]	10.50	10.52	10.55	10.57	10.61

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5, Measuring Tolerance: ±3%
 * NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass 1.5, Wind Speed 1m/s

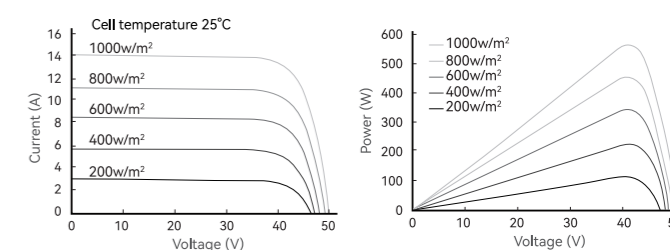
TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.34%/°C
Temperature Coefficient (Voc)	-0.27%/°C
Temperature Coefficient (Isc)	+0.045%/°C
NMOT	45±2°C

MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Power Output Tolerance	0~+5W

I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification

- ISO 9001:2015 / quality management system
- ISO 14001:2015 / environmental management system
- ISO 45001:2018 / occupation health safety management system
- ISO 50001:2011 / energy management system
- IEC TS 62941—2016 / PV industry quality management system
- IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt), IEC 62716 (Ammonia), IEC 60068-2-68(Sand)



High Power Output
Low LCOE

Maximum Power
565W+

TWMPD

P-type Half-cell Monofacial Module (72)

72HS545-565W

www.tw-solar.com

- Commercial Rooftop
- Utility-scale PV Plants
- 12 YEAR Materials Warranty
- 25 YEAR Power Warranty

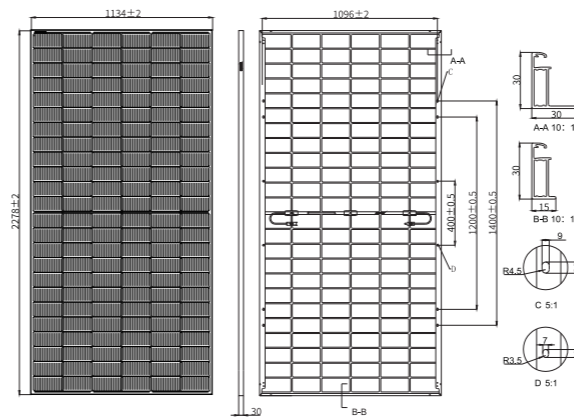


Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers. TW Solar reserves the final right of interpretation.



DRAWINGS (Unit: mm)



ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMPD-72HDXXX					
Maximum Power: Pmax [W]	540	545	550	555	560
Open Circuit Voltage: Voc [V]	49.70	49.90	50.10	50.30	50.50
Short Circuit Current: Isc [A]	13.78	13.83	13.88	13.93	13.98
Voltage at Maximum Power: Vmp [V]	41.56	41.76	41.96	42.16	42.36
Current at Maximum Power: Imp [A]	13.00	13.05	13.11	13.17	13.23
Module Efficiency: η [%]	20.9	21.1	21.3	21.5	21.7

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	408.6	412.4	416.2	420.0	423.8
Open Circuit Voltage: Voc [V]	46.48	46.74	47.01	47.28	47.47
Short Circuit Current: Isc [A]	11.04	11.08	11.12	11.16	11.20
Voltage at Maximum Power: Vmp [V]	38.45	38.67	38.90	39.12	39.31
Current at Maximum Power: Imp [A]	10.62	10.66	10.70	10.74	10.79

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass1.5, Measuring Tolerance: ±3%
 * NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s

ELECTRICAL CHARACTERISTICS (Rear Power Gain)

5%	Maximum Power: Pmax[W]	567.0	572.3	577.5	582.8	588.0
	Module Efficiency: η [%]	21.9	22.2	22.4	22.6	22.8
15%	Maximum Power: Pmax[W]	621.0	626.8	632.5	638.3	644.0
	Module Efficiency: η [%]	24.0	24.3	24.5	24.7	24.9
25%	Maximum Power: Pmax[W]	675.0	681.3	687.5	693.8	700.0
	Module Efficiency: η [%]	26.1	26.4	26.6	26.9	27.1

TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.34%/°C
Temperature Coefficient (Voc)	-0.28%/°C
Temperature Coefficient (Isc)	+0.05%/°C
NMOT	45±2°C

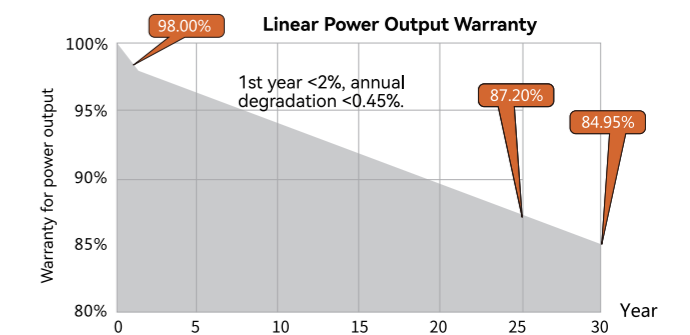
MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Output Tolerance	0~+5W
Maximum Bifaciality	70±5%

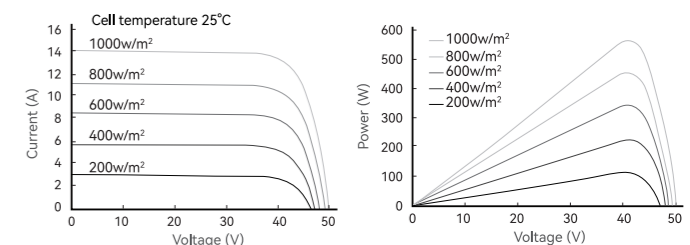
MECHANICAL PARAMETERS

Cells	TPC (P Type Monocrystalline Cell)
Cell Orientation	144[6X24]
Dimension	2278±2 X1134±2X30mm
Weight	32.7kg
Front Glass	2.0mm high transmittance, AR semi-tempered glass
Rear Glass	2.0mm high transmittance, semi-tempered glass
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	36pcs per pallet, 720pcs per 40'HC

WARRANTY



I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification

- ISO 9001:2015 / quality management system
- ISO 14001:2015 / environmental management system
- ISO 45001:2018 / occupation health safety management system
- ISO 50001:2011 / energy management system
- IEC TS 62941—2016 / PV industry quality management system
- IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt), IEC 62716 (Ammonia), IEC 60068-2-68(Sand)



TWMPD

P-type Half-cell Bifacial Module (72)

72HD540-560W

www.tw-solar.com

High Power Output
Low LCOE

Maximum Power
560W+

Commercial
Rooftop

Utility-scale
PV Plants

12
YEAR
Materials
Warranty

30
YEAR
Power
Warranty

Certified

TIER 1
Bloomberg
ENERGY FINANCE

Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification, The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers, TW Solar reserves the final right of interpretation.

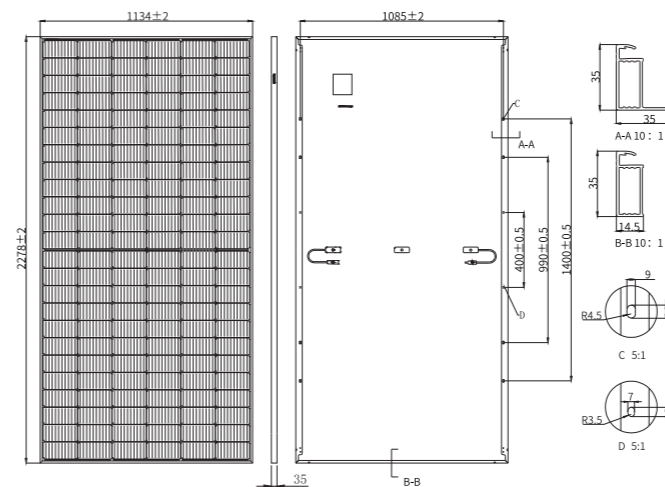




TWMND N-type Half-cell Monofacial Module (72)

72HS565-585W

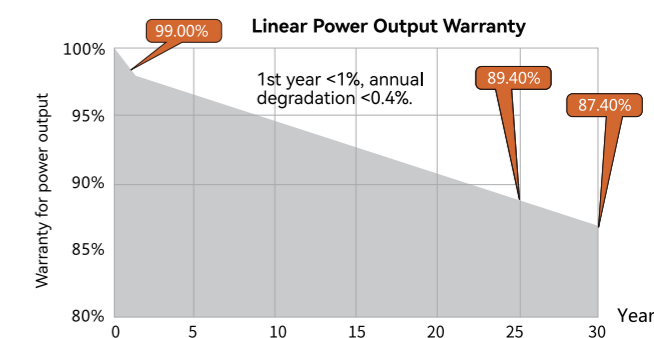
DRAWINGS (Unit: mm)



MECHANICAL PARAMETERS

Cells	TNC (N Type Monocrystalline Cell)
Cell Orientation	144[6X24]
Dimension	2278±2 X1134±2X35mm
Weight	27.8kg
Front Glass	3.2mm high transmittance, AR coated tempered glass
Backsheet	White
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm or ±1400mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	31pcs per pallet, 620pcs per 40'HC

WARRANTY



ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMND-72HSXXX					
Maximum Power: Pmax [W]	565	570	575	580	585
Open Circuit Voltage: Voc [V]	52.20	52.40	52.60	52.80	53.00
Short Circuit Current: Isc [A]	13.38	13.42	13.46	13.50	13.54
Voltage at Maximum Power: Vmp [V]	44.43	44.63	44.83	45.03	45.23
Current at Maximum Power: Imp [A]	12.72	12.78	12.83	12.90	12.94
Module Efficiency: η [%]	21.9	22.1	22.3	22.5	22.6

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	427.6	431.4	435.2	438.9	442.7
Open Circuit Voltage: Voc [V]	49.57	49.80	50.03	50.22	50.41
Short Circuit Current: Isc [A]	10.54	10.56	10.59	10.63	10.66
Voltage at Maximum Power: Vmp [V]	42.60	42.87	43.15	43.34	43.54
Current at Maximum Power: Imp [A]	10.03	10.06	10.08	10.12	10.16

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass 1.5, Measuring Tolerance: ±3%
 * NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass 1.5, Wind Speed 1m/s

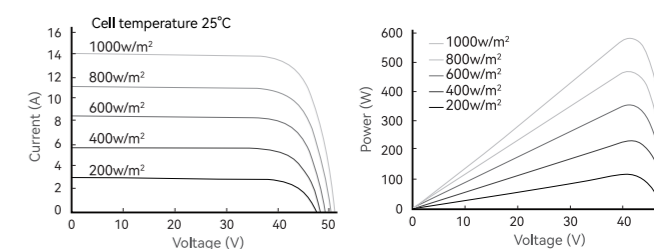
TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.30%/°C
Temperature Coefficient (Voc)	-0.25%/°C
Temperature Coefficient (Isc)	+0.046%/°C
NMOT	45±2°C

MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Power Output Tolerance	0~+5W

I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification

- ISO 9001:2015 / quality management system
- ISO 14001:2015 / environmental management system
- ISO 45001:2018 / occupation health safety management system
- ISO 50001:2011 / energy management system
- IEC TS 62941—2016 / PV industry quality management system
- IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt), IEC 62716 (Ammonia), IEC 60068-2-68(Sand)



High Power Output
Low LCOE

Maximum Power
585W+

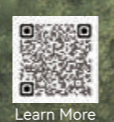
TWMND

N-type Half-cell Monofacial Module (72)

72HS565-585W

www.tw-solar.com

- Commercial Rooftop
- Utility-scale PV Plants
- 12 YEAR Materials Warranty
- 30 YEAR Power Warranty

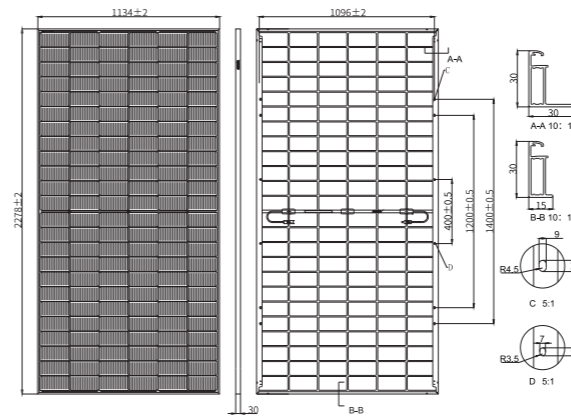


Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers. TW Solar reserves the final right of interpretation.



DRAWINGS (Unit: mm)



ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMND-72HDXXX	560	565	570	575	580
Maximum Power: Pmax [W]	560	565	570	575	580
Open Circuit Voltage: Voc [V]	50.84	51.04	51.24	51.44	51.64
Short Circuit Current: Isc [A]	14.13	14.17	14.21	14.25	14.29
Voltage at Maximum Power: Vmp [V]	42.48	42.68	42.88	43.08	43.28
Current at Maximum Power: Imp [A]	13.18	13.24	13.29	13.35	13.40
Module Efficiency: η [%]	21.7	21.9	22.1	22.3	22.5

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	421.1	424.8	428.6	432.4	436.1
Open Circuit Voltage: Voc [V]	48.29	48.48	48.67	48.86	49.05
Short Circuit Current: Isc [A]	11.42	11.47	11.52	11.56	11.60
Voltage at Maximum Power: Vmp [V]	39.84	39.89	39.95	40.00	40.19
Current at Maximum Power: Imp [A]	10.56	10.63	10.70	10.78	10.85

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass1.5, Measuring Tolerance: ±3%
* NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s

ELECTRICAL CHARACTERISTICS (Rear Power Gain)

5%	Maximum Power: Pmax[W]	588.0	593.3	598.5	603.8	609.0
	Module Efficiency: η [%]	22.8	23.0	23.2	23.4	23.6
15%	Maximum Power: Pmax[W]	644.0	649.8	655.5	661.3	667.0
	Module Efficiency: η [%]	24.9	25.2	25.4	25.6	25.8
25%	Maximum Power: Pmax[W]	700.0	706.3	712.5	718.8	725.0
	Module Efficiency: η [%]	27.1	27.3	27.6	27.8	28.1

TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.30%/°C
Temperature Coefficient (Voc)	-0.25%/°C
Temperature Coefficient (Isc)	+0.046%/°C
NMOT	45±2°C

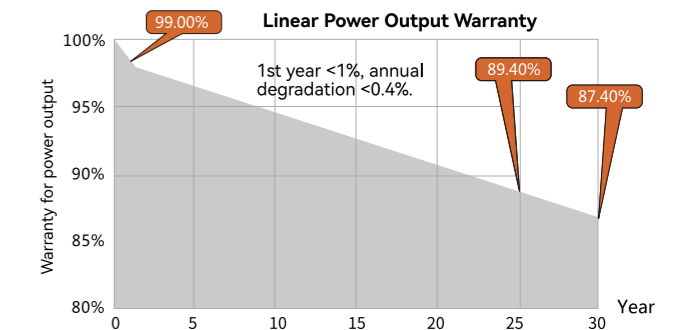
MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Output Tolerance	0~+5W
Maximum Bifaciality	80±5%

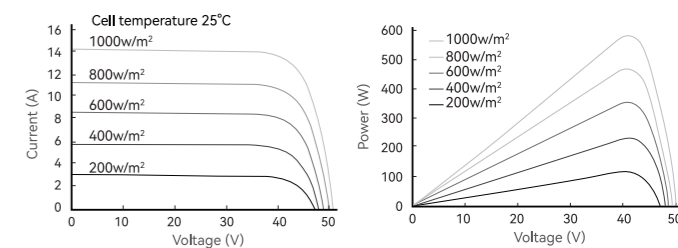
MECHANICAL PARAMETERS

Cells	TNC (N Type Monocrystalline Cell)
Cell Orientation	144[6X24]
Dimension	2278±2 X1134±2X30mm
Weight	32.7kg
Front Glass	2.0mm high transmittance, AR semi-tempered glass
Rear Glass	2.0mm high transmittance, semi-tempered glass
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	36pcs per pallet, 720pcs per 40'HC

WARRANTY



I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification

- ISO 9001:2015 / quality management system
- ISO 14001:2015 / environmental management system
- ISO 45001:2018 / occupation health safety management system
- ISO 50001:2011 / energy management system
- IEC TS 62941—2016 / PV industry quality management system
- IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt), IEC 62716 (Ammonia), IEC 60068-2-68(Sand)



TWMND

N-type Half-cell Bifacial Module (72)

72HD560-580W

www.tw-solar.com

High Power Output
Low LCOE

Maximum Power
580W+

Commercial
Rooftop

Utility-scale
PV Plants

12
YEAR
Materials
Warranty

30
YEAR
Power
Warranty

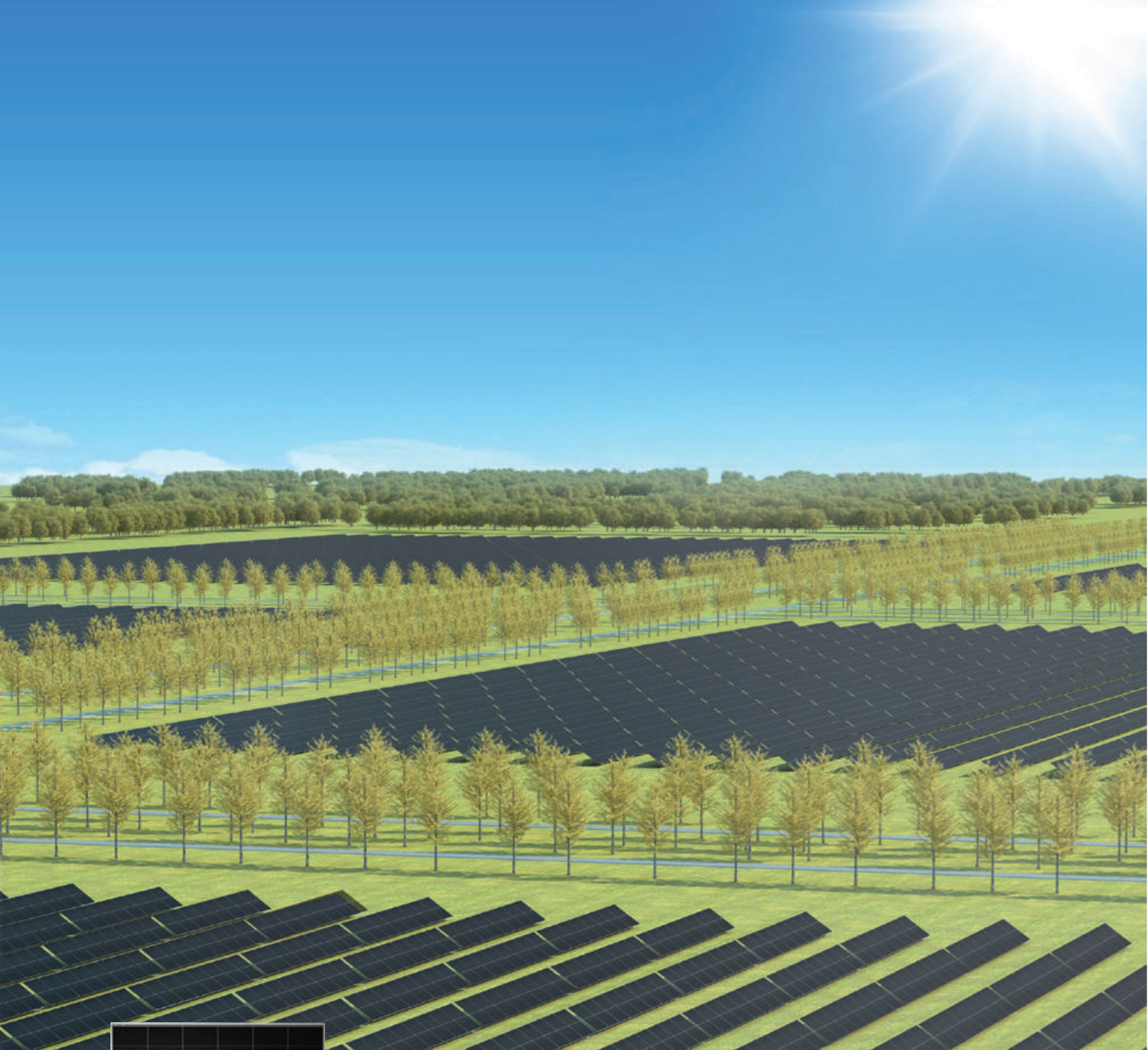
Certified

TIER 1
Bloomberg
ENERGY FINANCE



Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changing Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers. TW Solar reserves the final right of interpretation.



High Power Output
Low LCOE

Maximum Power
610W+

TWMPF

P-type Half-cell Monofacial Module (60)

60HS590-610W

www.tw-solar.com

Residential Rooftop

12 YEAR Materials Warranty

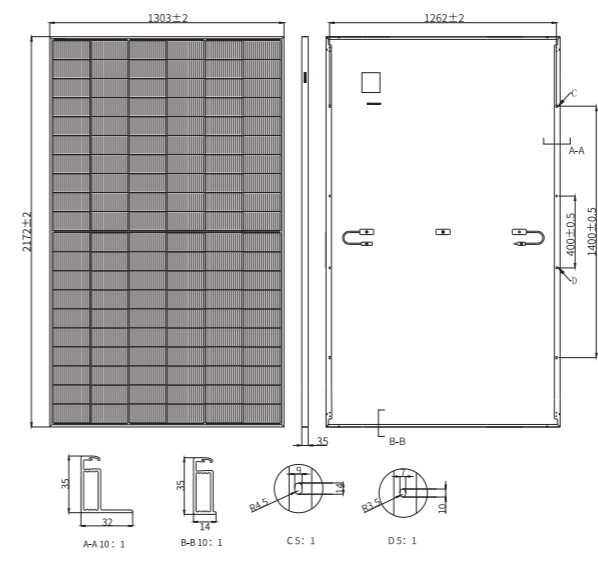
25 YEAR Power Warranty



TWMPF P-type Half-cell Monofacial Module (60)

60HS590-610W

DRAWINGS (Unit: mm)



MECHANICAL PARAMETERS

Cells	TPC (P Type Monocrystalline Cell)
Cell Orientation	120[6X20]
Dimension	2172±2 X1303±2X35mm
Weight	31kg
Front Glass	3.2mm high transmittance, AR coated tempered glass
Backsheet	White
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	31pcs per pallet, 558pcs per 40'HC

ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMPF-60HSXXX					
Maximum Power: Pmax [W]	590	595	600	605	610
Open Circuit Voltage: Voc [V]	41.05	41.25	41.45	41.65	41.85
Short Circuit Current: Isc [A]	18.45	18.50	18.55	18.61	18.66
Voltage at Maximum Power: Vmp [V]	33.96	34.16	34.36	34.56	34.76
Current at Maximum Power: Imp [A]	17.37	17.41	17.46	17.50	17.55
Module Efficiency: η [%]	20.8	21.0	21.2	21.4	21.6

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	446.4	450.2	454.0	457.7	461.5
Open Circuit Voltage: Voc [V]	38.67	38.86	39.05	39.24	39.43
Short Circuit Current: Isc [A]	14.87	14.92	14.96	15.00	15.04
Voltage at Maximum Power: Vmp [V]	31.69	31.88	32.06	32.25	32.43
Current at Maximum Power: Imp [A]	14.09	14.12	14.16	14.19	14.23

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass1.5, Measuring Tolerance: ±3%
* NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s

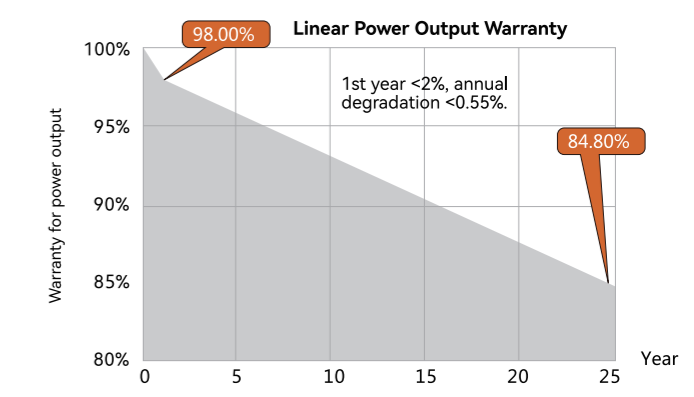
TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.34%/°C
Temperature Coefficient (Voc)	-0.27%/°C
Temperature Coefficient (Isc)	+0.045%/°C
NMOT	45±2°C

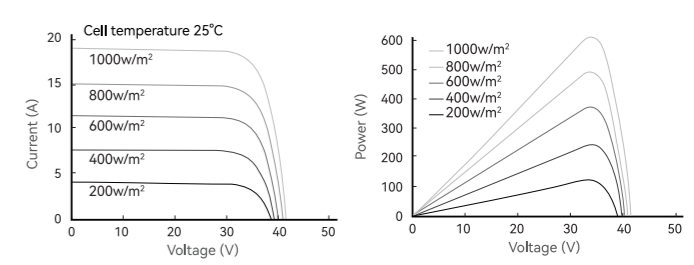
MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30A
Power Output Tolerance	0~+5W

WARRANTY



I-V CURVE



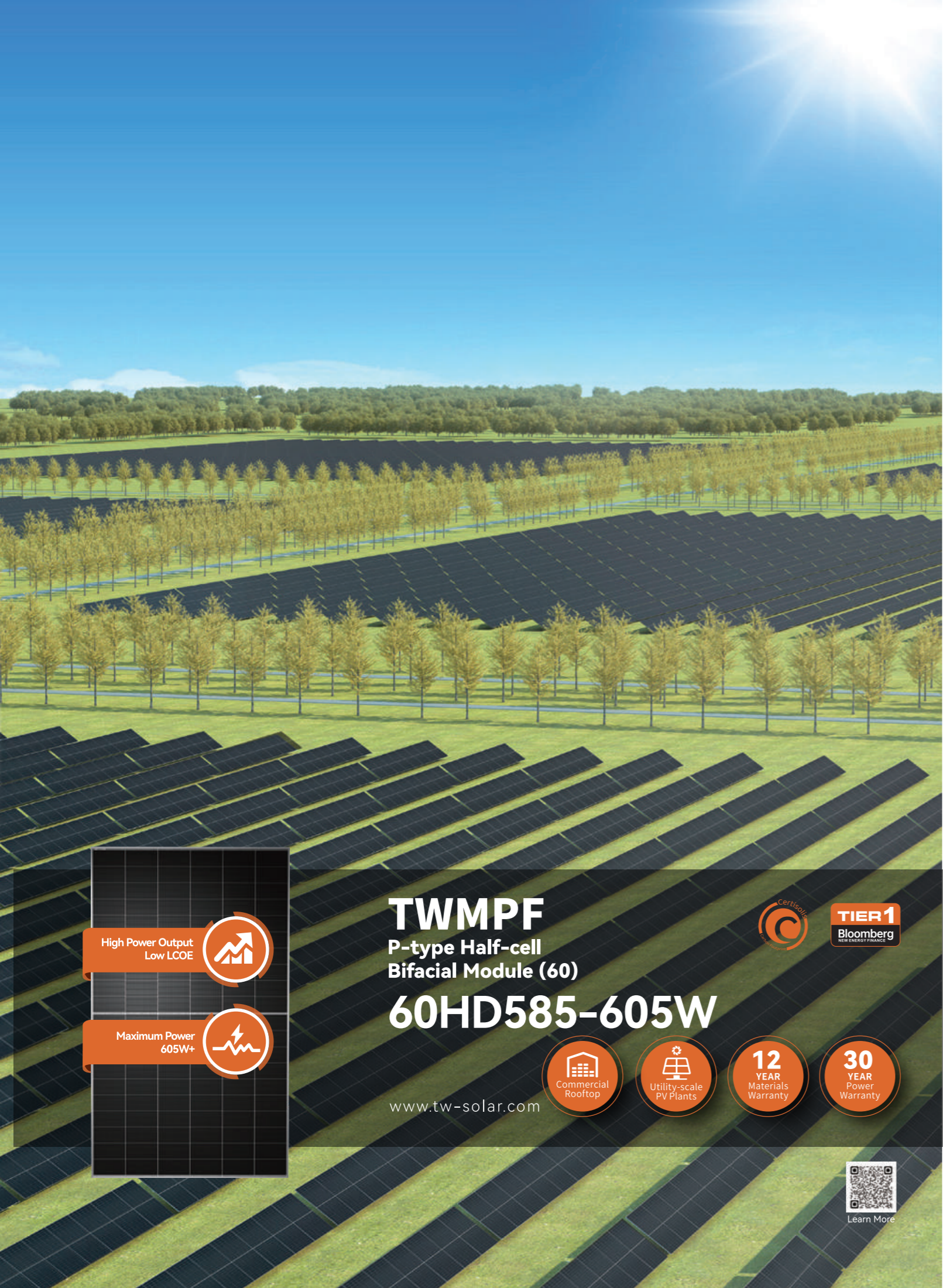
CERTIFICATIONS

Quality Management System and Product Certification

- ISO 9001:2015 / quality management system
- ISO 14001:2015 / environmental management system
- ISO 45001:2018 / occupation health safety management system
- ISO 50001:2011 / energy management system
- IEC TS 62941—2016 / PV industry quality management system
- IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt), IEC 62716 (Ammonia), IEC 60068-2-68(Sand)

Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification, The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers, TW Solar reserves the final right of interpretation.



High Power Output
Low LCOE

Maximum Power
605W+

TWMPF

P-type Half-cell Bifacial Module (60)

60HD585-605W

www.tw-solar.com

Certisolar

TIER 1
Bloomberg
NEW ENERGY FINANCER

Commercial
Rooftop

Utility-scale
PV Plants

12
YEAR
Materials
Warranty

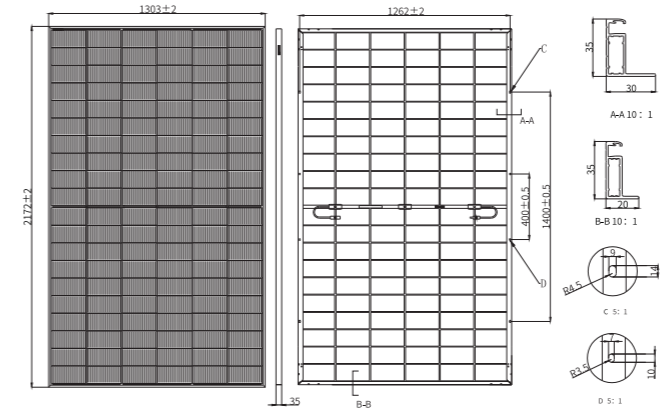
30
YEAR
Power
Warranty



TWMPF P-type Half-cell Bifacial Module (60)

60HD585-605W

DRAWINGS (Unit: mm)



MECHANICAL PARAMETERS

Cells	TPC (P Type Monocrystalline Cell)
Cell Orientation	120[6X20]
Dimension	2172±2 X1303±2X35mm
Weight	34.8kg
Front Glass	2.0mm high transmittance, AR semi-tempered glass
Rear Glass	2.0mm high transmittance, semi-tempered glass
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	31pcs per pallet, 558pcs per 40'HC

ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMPF-60HDXXX

Maximum Power: Pmax [W]	585	590	595	600	605
Open Circuit Voltage: Voc [V]	41.04	41.24	41.44	41.64	41.84
Short Circuit Current: Isc [A]	18.30	18.36	18.41	18.46	18.52
Voltage at Maximum Power: Vmp [V]	33.95	34.15	34.35	34.55	34.75
Current at Maximum Power: Imp [A]	17.23	17.28	17.32	17.37	17.41
Module Efficiency: η [%]	20.7	20.8	21.0	21.2	21.4

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	442.6	446.4	450.2	454.0	457.7
Open Circuit Voltage: Voc [V]	38.66	38.84	39.03	39.22	39.41
Short Circuit Current: Isc [A]	14.76	14.80	14.84	14.88	14.93
Voltage at Maximum Power: Vmp [V]	31.67	31.86	32.05	32.23	32.42
Current at Maximum Power: Imp [A]	13.97	14.01	14.05	14.09	14.12

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass1.5, Measuring Tolerance: ±3%
 * NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s

ELECTRICAL CHARACTERISTICS (Rear Power Gain)

5%	Maximum Power: Pmax[W]	614.3	619.5	624.8	630	635.3
	Module Efficiency: η [%]	21.7	21.9	22.1	22.3	22.4
15%	Maximum Power: Pmax[W]	672.8	678.5	684.3	690.0	695.8
	Module Efficiency: η [%]	23.8	24.0	24.2	24.4	24.6
25%	Maximum Power: Pmax[W]	731.3	737.5	743.8	750.0	756.3
	Module Efficiency: η [%]	25.8	26.1	26.3	26.5	26.7

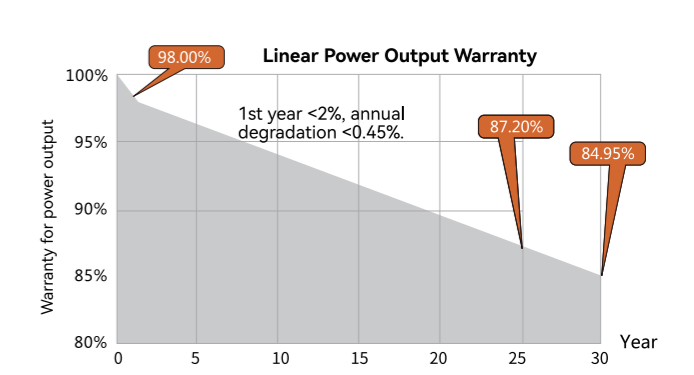
TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.34%/°C
Temperature Coefficient (Voc)	-0.28%/°C
Temperature Coefficient (Isc)	+0.05%/°C
NMOT	45±2°C

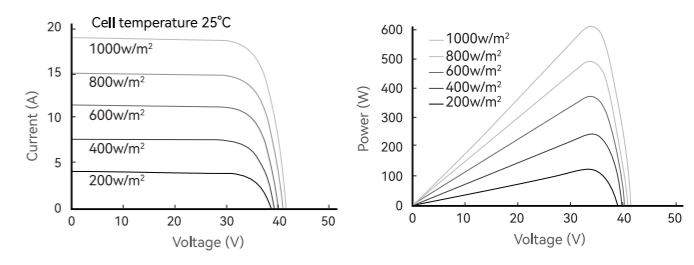
MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	35A
Power Output Tolerance	0~+5W
Maximum Bifaciality	70±5%

WARRANTY



I-V CURVE



CERTIFICATIONS

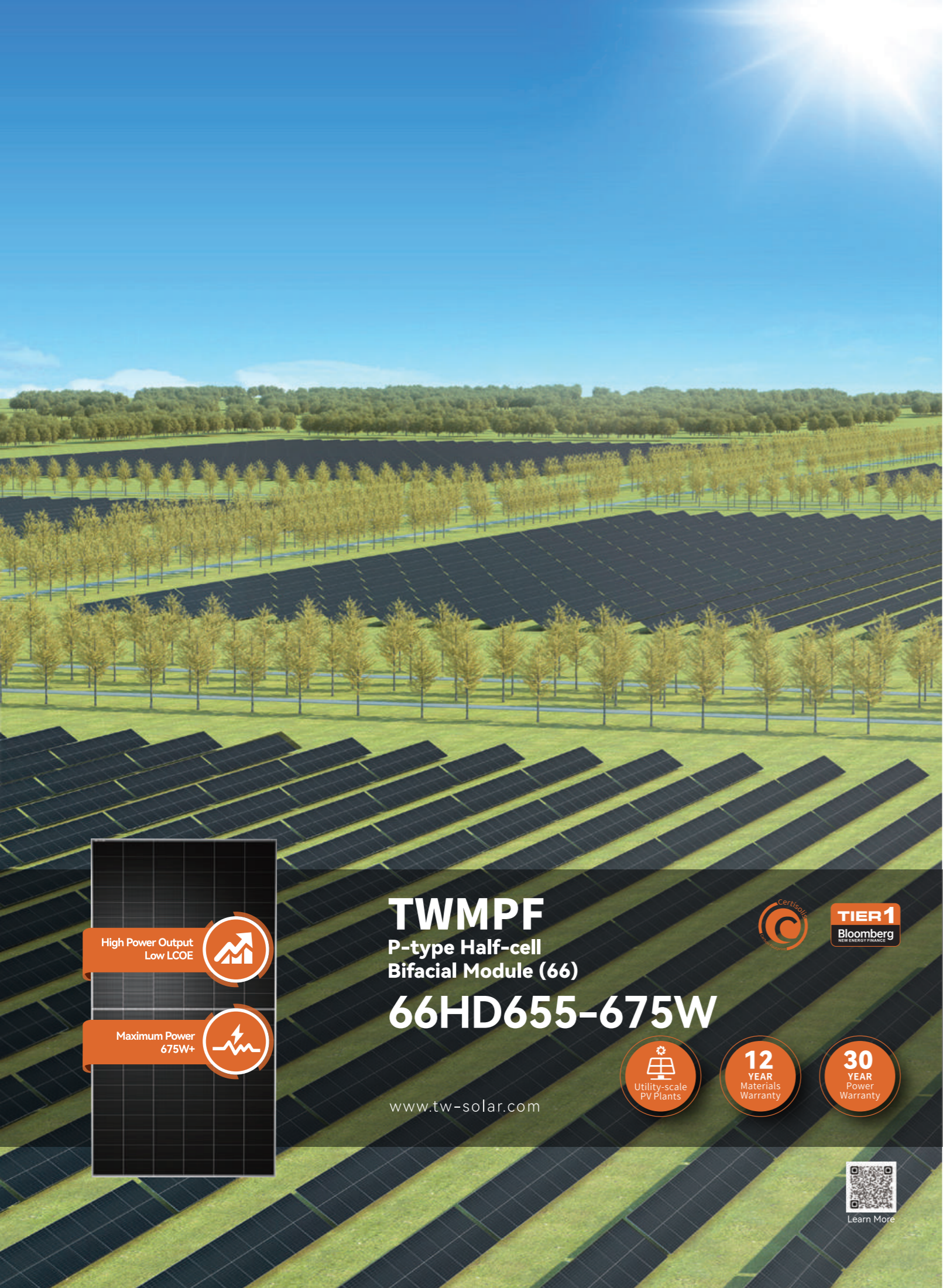
Quality Management System and Product Certification

ISO 9001:2015 / quality management system
 ISO 14001:2015 / environmental management system
 ISO 45001:2018 / occupation health safety management system
 ISO 50001:2011 / energy management system
 IEC TS 62941—2016 / PV industry quality management system
 IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt),
 IEC 62716 (Ammonia), IEC 60068-2-68(Sand)



Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers. TW Solar reserves the final right of interpretation.



High Power Output
Low LCOE

Maximum Power
675W+

TWMPF

P-type Half-cell Bifacial Module (66)

66HD655-675W

www.tw-solar.com

Utility-scale
PV Plants

12
YEAR
Materials
Warranty

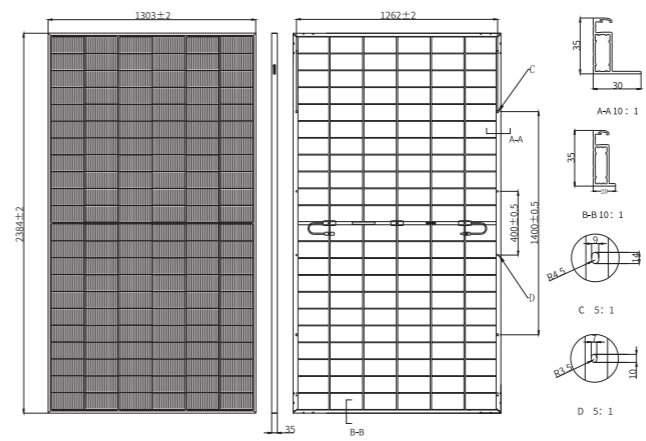
30
YEAR
Power
Warranty



TWMPF P-type Half-cell Bifacial Module (66)

66HD655-675W

DRAWINGS (Unit: mm)



ELECTRICAL CHARACTERISTICS (STC)

Module Type: TWMPF-66HDXXX					
Maximum Power: Pmax [W]	655	660	665	670	675
Open Circuit Voltage: Voc [V]	45.60	45.80	46.00	46.20	46.40
Short Circuit Current: Isc [A]	18.26	18.31	18.36	18.41	18.46
Voltage at Maximum Power: Vmp [V]	37.80	38.00	38.20	38.40	38.60
Current at Maximum Power: Imp [A]	17.33	17.37	17.41	17.45	17.49
Module Efficiency: η [%]	21.1	21.2	21.4	21.6	21.7

ELECTRICAL CHARACTERISTICS (NMOT)

Maximum Power: Pmax [W]	495.6	499.4	503.1	506.9	510.7
Open Circuit Voltage: Voc [V]	42.96	43.14	43.33	43.52	43.71
Short Circuit Current: Isc [A]	14.72	14.76	14.80	14.84	14.88
Voltage at Maximum Power: Vmp [V]	35.26	35.45	35.64	35.82	36.01
Current at Maximum Power: Imp [A]	14.05	14.09	14.12	14.15	14.18

* STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass1.5, Measuring Tolerance: ±3%
* NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s

ELECTRICAL CHARACTERISTICS (Rear Power Gain)

5%	Maximum Power: Pmax[W]	687.8	693.0	698.3	703.5	708.8
	Module Efficiency: η [%]	22.1	22.3	22.5	22.6	22.8
15%	Maximum Power: Pmax[W]	753.3	759.0	764.8	770.5	776.3
	Module Efficiency: η [%]	24.2	24.4	24.6	24.8	25.0
25%	Maximum Power: Pmax[W]	818.8	825.0	831.3	837.5	843.8
	Module Efficiency: η [%]	26.4	26.6	26.8	27.0	27.2

TEMPERATURE PARAMETERS

Temperature Coefficient (Pmax)	-0.34%/°C
Temperature Coefficient (Voc)	-0.28%/°C
Temperature Coefficient (Isc)	+0.05%/°C
NMOT	45±2°C

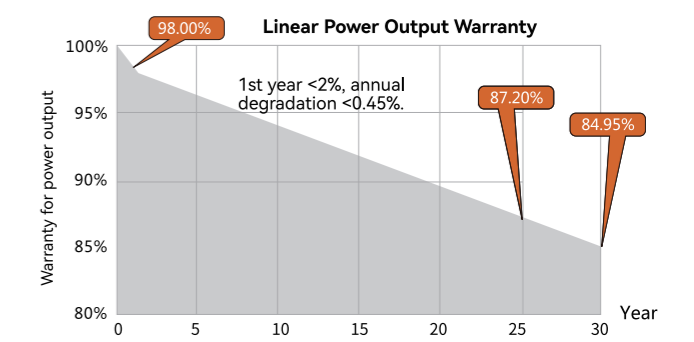
MAXIMUM RATINGS

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	35A
Power Output Tolerance	0~+5W
Maximum Bifaciality	70±5%

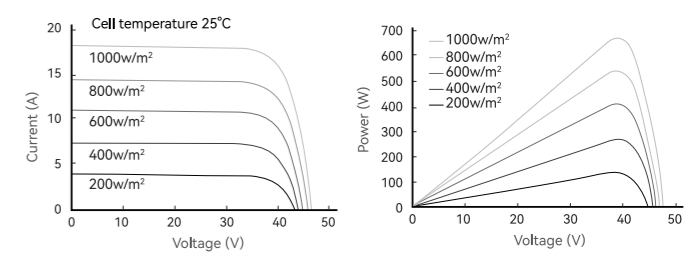
MECHANICAL PARAMETERS

Cells	TPC (P Type Monocrystalline Cell)
Cell Orientation	132[6X22]
Dimension	2384±2 X1303±2X35mm
Weight	38.7kg
Front Glass	2.0mm high transmittance, AR semi-tempered glass
Rear Glass	2.0mm high transmittance, semi-tempered glass
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, ~200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	31pcs per pallet, 558pcs per 40'HC

WARRANTY



I-V CURVE



CERTIFICATIONS

Quality Management System and Product Certification

ISO 9001:2015 / quality management system
ISO 14001:2015 / environmental management system
ISO 45001:2018 / occupation health safety management system
ISO 50001:2011 / energy management system
IEC TS 62941—2016 / PV industry quality management system
IEC 61215/61730, IEC 62804(PID), IEC 61701(Salt), IEC 62716 (Ammonia), IEC 60068-2-68(Sand)



Email: sales@tongwei.com Website: www.tongwei.com.cn Add: 888 Changning Avenue, High-tech Zone, Hefei City, Anhui Province

Declaration: With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification, The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers, TW Solar reserves the final right of interpretation.

Global Partnters

