

## Shingled bifacial module

# TH645~670PMB6 69SDC



### Features of Module



**Shingling Technology**  
Innovative structure, low-temperature adhesive bonding, high-density layout.



**Beautiful Appearance**  
Uniform layout, better aesthetic.



**Superior Safety and Reliability**  
No hidden welding crack, low operating temperature, high pressure resistance.



**Low System Cost**  
High module efficiency, reducing system cost.



**Low Hot Spot Risk**  
Parallel circuit design reduces shading loss.



**Low Shading Loss**  
Full parallel arrangement brings high effective power generation hours.



**Eco-friendly**  
Adhering to green philosophy, no fluorine and low lead.

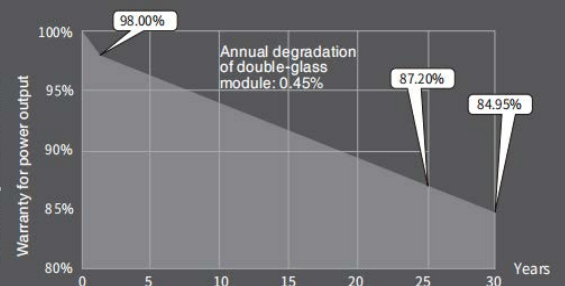
### Linear Power Output Warranty

**15**

15-year warranty for materials.

**30**

30-year warranty for linear power output.



### Quality Management System and Product Certification

IEC61215/61730

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



**Electrical Characteristics (STC)**

Module type: TH *** PMB6-69SDC	670	665	660	655	650	645
Maximum power - Pm (W)	670	665	660	655	650	645
Open circuit voltage - Voc (V)	47.1	47.0	46.9	46.8	46.7	46.6
Short circuit current Isc (A)	18.26	18.16	18.06	17.97	17.84	17.74
Maximum Power Voltage-Vm (V)	39.1	39.0	38.9	38.8	38.8	38.7
Maximum Power Current-Im (A)	17.16	17.07	16.98	16.89	16.77	16.68
Module Efficiency-η (%)	21.6	21.4	21.2	21.1	20.9	20.8

**Electrical Characteristics (NMOT)**

Maximum power - Pm (W)	504	501	497	493	489	486
Open circuit voltage - Voc (V)	44.9	44.8	44.7	44.5	44.4	44.3
Short circuit current Isc (A)	14.71	14.63	14.55	14.47	14.37	14.29
Maximum Power Voltage-Vm (V)	37.3	37.2	37.1	37.0	37.0	36.9
Maximum Power Current-Im (A)	13.54	13.46	13.39	13.32	13.25	13.17

\* STC: Irradiation 1000W/m<sup>2</sup>; AM1.5; environmental temperature 25°C; tested according to EN 60904-3;  
 \* NMOT: irradiation 800W/m<sup>2</sup>; wind speed 1m/s; environmental temperature 20°C;  
 \* Pm tolerance: 0~+5W ; power test uncertainty: ±3%; Voc[V], Isc[A], Vm[V] and Im[A] test tolerance: ±3%  
 \* Bifaciality: 70%±5%;

**Comparison of Rear Power Gains (660W)**

Power Gain-PG	5%	10%	15%	20%	25%	30%
Maximum Power-Pm [W]	693	726	759	792	825	858
Open Circuit Voltage-Voc (V)	46.9	46.9	46.9	47.0	47.0	47.0
Short Circuit Current-Isc (A)	18.97	19.87	20.77	21.68	22.58	23.48
Maximum Power Voltage-Vm (V)	38.9	38.9	38.9	39.0	39.0	39.0
Maximum Power Current-Im (A)	17.83	18.68	19.53	20.38	21.23	22.07

**Mechanical Parameters**

Dimensions	2384 × 1303 × 35 mm (L×W×H)				
Weight	38.5 kg				
Front Glass	Tempered glass,2.0mm				
Frame	Anodized aluminum profile				
Cells	Mono-crystalline solar cell				
Cell Orientation	414 (69*6)				
Junction Box	IP68, three diodes				
Cable	4mm <sup>2</sup> , +600mm/-1200mm(Vertical), +220mm/-180mm (Horizontal)				
Packaging mode	31pcs/ box; 558pcs/ 40' HQ; 744pcs/ flat car				

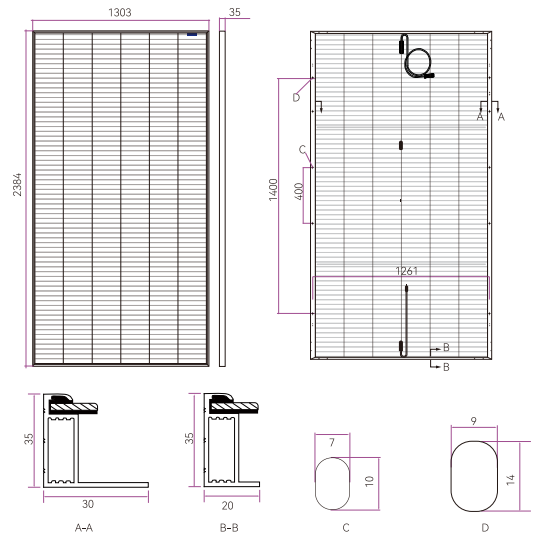
**Temperature Parameters**

NMOT	42.3°C(±2°C)
Temperature Coefficient of Voc	-0.27%/°C
Temperature Coefficient of Isc	0.04%/°C
Temperature Coefficient of Pm	-0.34%/°C

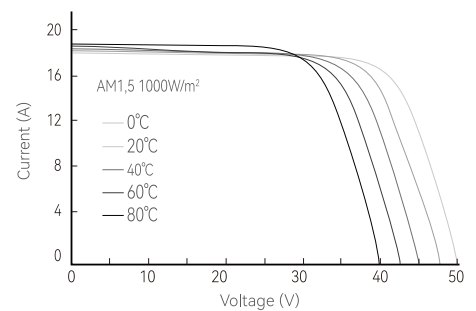
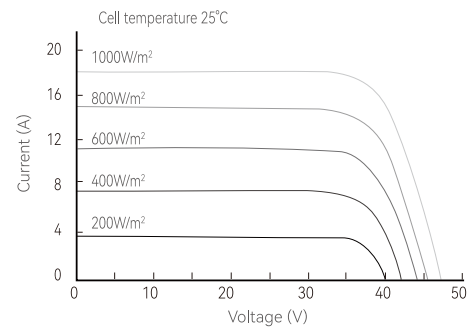
**Maximum Rated Parameters**

Maximum System Voltage (V)	DC1500
Series Fuse Rating (A)	30
Surface Load Capacity (Pa)	Front5400/ Back2400
Temperature Range (°C)	-40~+ 85
Withstanding Hail	Maximum diameter of 25 mm with impact speed of 23 m/s

**Drawings**



**I-V Curve**



**Statement:**

With technological progress and product updates, there may be deviations between the technical parameters of Tongwei's module products and the technical parameters contained in this specification, and Tongwei Solar has the right to adjust the technical parameters at any time without notifying the customer, the final interpretation of the technical specification is vested in Tongwei Solar.

## Cable type

Zhejiang Renhe Photovoltaic Technology Co., Ltd.

Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.

Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.

Ningbo Kibor Wire&Cable Co., Ltd.

Wuxi Xinhongye Wire&Cable Co., Ltd.

Trina Solar Co., Ltd.

Changshu JHOSIN Communication Technology Co., Ltd.

SUZHOU YONGHAO CABLE CO LTD

QC Solar (Suzhou) Corporation

Suzhou Baohing Electric Wire & Cable Manufacturer Co., Ltd.

Jiangxi Jinko PV Material Co., Ltd.

Jiangxi Hejia Technology Co., Ltd.

YushanXinzhan Industrial Co., Ltd.

DONGGUAN XINBEISEN WIRE AND CABLE CO LTD

Jiangxi Han Guang Cable Co., Ltd.

RUIXU INDUSTRY CO., LTD.

Suzhou Xietong Photovoltaic Technology Co., Ltd.

Jiangsu Tongling Electric Co., Ltd.

Zhejiang Chuangyuan Photovoltaic Technology Co.,Ltd.

Tongwei Solar (Hefei) Co., Ltd.

## Connector type

05-8, Zhejiang Renhe Photovoltaic Technology Co., Ltd.

PV-KST4-EVO2/xy\_UR , PV-KBT4-EVO2/xy\_UR, Stäubli Electrical Connectors AG

PV-KST4-EVO2A/xy, PV-KBT4-EVO2A/xy, Stäubli Electrical Connectors AG

UTXCFabcd, UTXCMabcd,UTXCFabcde, UTXCMabcde, Amphenol Technology (Shenzhen) Co., Ltd.

RHC2xyzu, Zhejiang Renhe Photovoltaic Technology Co., Ltd.

PV-JM608, Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.

PV-JM601A, Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.

PV4-S1yx, Tyco Electronics (Shanghai) Co., Ltd.

HQC4, Hanwha Q CELLS (Qidong) Co., Ltd

PV-CO02-xy, SUZHOU UKT NEW ENERGY TECHNOLOGY CO., LTD

TS4-xz , Trina Solar Co., Ltd.

TS4, Trina Solar Co., Ltd.

H4Cabcdef, Amphenol Technology (Shenzhen) Co., Ltd.

PV-CF-C-2, 5-4-SETxxxx, PV-CM-C-2, 5-4-SETxxxx, Phoenix Contact GmbH & Co.KG

PV-ZH202B, Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.

QC4.10-cds, QC Solar (Suzhou) Corporation

PV-MH5, Ningbo Minghe New Energy Technology Co., Ltd.

TL-CABLE01S-F, TL-CABLE01S, Jiangsu Tongling Electric Co., Ltd.

PV-KST4-EVO 2A/xy\_UR; PV-KBT4-EVO 2A/xy\_UR, Stäubli Electrical Connectors AG



### **Connector type**

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PV-XT101.1, Suzhou Xietong Photovoltaic Technology Co., Ltd.

PV-JK03M-2, PV-JK03M/xy, PV-JK03M1/xy, PV-JK03M2/xy, Jiangxi Jinko PV Material Co., Ltd.

UTXCFabcde, UTXCMabcde, Amphenol Technology (Shenzhen) Co., Ltd.

TW-PVCON-01, Tongwei Solar (Hefei) Co., Ltd.

PV-CY03L, Zhejiang Chuangyuan Photovoltaic Technology Co., Ltd.

PV-CY20L, Zhejiang Chuangyuan Photovoltaic Technology Co., Ltd.