

210PERC - Half-cell Bifacial Module(60)

Product Feature



High Power Output
Low LCOE



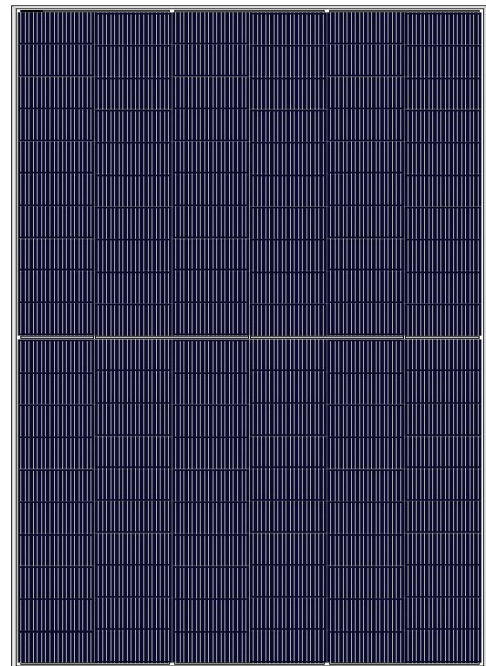
Maximum Power
up to 610W+



High Reliability

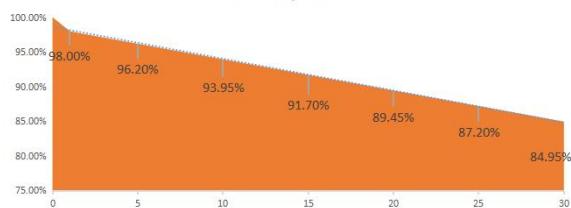


Low Degradation



Linear Warranty

Degradation: 2% for 1st year, 0.45%/year from 2~30 years



Warranty for Material and Processing



Warranty for Linear Power output

Management System certification

- ISO9001: 2015/Quality Management System
- ISO14001: 2015/Environmental Management System
- ISO45001: 2018/Occupational Health and Safety Management System
- IEC62941: 2019/Quality system for PV module manufacturing

Product certification



Tongwei Solar (Hefei) Co., Ltd
Made in China

Electrical Characteristics (STC)

Module type: TWMPF-60HD***				
Maximum Power: Pmax [W]	595	600	605	610
Open Circuit Voltage: Voc [V]	41.44	41.64	41.84	42.04
Short Circuit Current: Isc [A]	18.41	18.46	18.52	18.57
Voltage at Maximum Power: Vmp [V]	34.35	34.55	34.75	34.95
Current at Maximum Power: Imp [A]	17.32	17.37	17.41	17.46
Module Efficiency: η [%]	21.0	21.2	21.4	21.6
STC: Irradiance 1000W/m ² , Cell Temperature 25°C, AM=1.5, Test Uncertainty: ±3%				

Electrical Characteristics (NMOT)

Maximum Power: Pmax [W]	450.2	454.0	457.7	461.5
Open Circuit Voltage: Voc [V]	39.03	39.22	39.41	39.60
Short Circuit Current: Isc [A]	14.84	14.88	14.93	14.97
Voltage at Maximum Power: Vmp [V]	32.05	32.23	32.42	32.61
Current at Maximum Power: Imp [A]	14.05	14.09	14.12	14.16
NMOT: Irradiance 800W/m ² , Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s				

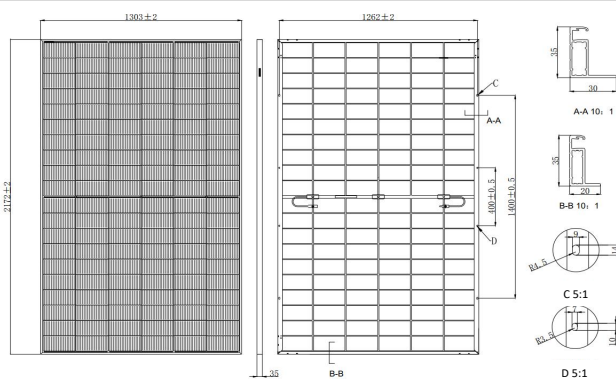
Electrical characteristics with different rear side power gain

5%	Maximum Power: Pmax[W]	624.8	630.0	635.3	640.5
	Module Efficiency: η [%]	22.1	22.3	22.4	22.6
15%	Maximum Power: Pmax[W]	684.3	690.0	695.8	701.5
	Module Efficiency: η [%]	24.2	24.4	24.6	24.8
25%	Maximum Power: Pmax[W]	743.8	750.0	756.3	762.5
	Module Efficiency: η [%]	26.3	26.5	26.7	26.9

Mechanical Parameters

Cell Type	TPC
Cell Orientation	120[6×20]
Dimensions	2172±2×1303±2×35mm
Weight	34.8 kg
Front Glass	2.0 mm AR coated heat strengthened glass
Rear Glass	2.0 mm heat strengthened glass
Frame	Anodized aluminum alloy frame
Junction Box	IP68, 3 diodes
Cable	4.0 mm ²
Cable length	+400mm,-200mm,length can be customized
Wind/Snow load	2400Pa/5400Pa
Packaging	31 pcs per pallet,558 pcs per 40'HC
Fire class rating	Class C

Drawing(Unit:mm)

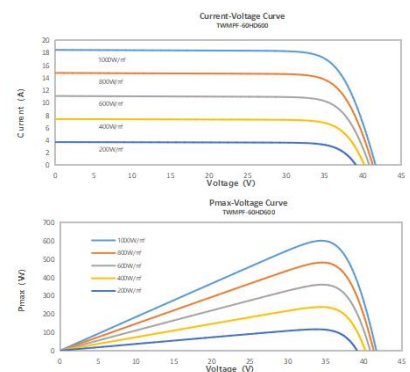


Temperature rating

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

Operating Parameters

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



Statement: With technological process and product update, there maybe deviation between the technical parameters of Tongwei's module products and the technical parameters contained in the 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.

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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, 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

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



Connector type

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.