

CERTIFICATE

TÜV NORD CERT GmbH
herewith declares that

Tongwei Solar (Hefei) Co., Ltd.
No.888, Changning Road, High-tech District,
Hefei City, Anhui Province, 230088
P.R. China

is authorized to provide the product mentioned below with the mark as illustrated:

Description of product (details see Annex 2):

Crystalline Silicon Terrestrial Photovoltaic (PV) modules



Valid from: 2022-11-10

Valid until: 2027-10-19

| | |
|-------------------------------|---|
| Certification program: | P12-VA-01 Rev. 17 09.20 |
| Certification fundamental(s): | IEC / EN 61215-1:2016; IEC / EN 61215-1-1:2016; IEC 61215-2:2016 / EN 61215-2:2017 + AC:2017 + AC:2018; IEC 61730-1:2016 / EN IEC 61730-1:2018 + AC:2018; IEC 61730-2:2016 / EN IEC 61730-2:2018 + AC:2018. |
| Registered No.: | 44 780 19 406749 - 401R14A1M25 |
| Manufacturer: | see Annex 1 |
| Test Report No.: | 492010913.039 |
| File No.: | PVP07102/22P-18 |



TÜV NORD CERT GmbH
Certification Body
Consumer Products



Essen, 2022-11-10

Please also pay attention to the information stated overleaf.

Manufacturer:

| | |
|--------------------------------|---|
| Manufacturer 1: | Tongwei Solar (Hefei) Co., Ltd. No.888, Changning Road, High-tech District, Hefei City, Anhui Province, 230088, P.R. China |
| Factory inspection report no.: | 862010358.006 |
| Manufacturer 2: | Hefei GCL System Integration New Energy Technology Co., Ltd. Southeast Corner of Intersection of Sidingshan Road and Ruquan Road, Hefei Circular Economy Demonstration Park, Feidong County, Hefei City, Anhui Province, P.R. China |
| Factory inspection report no.: | 862010688.001 |
| Manufacturer 3: | Jiangsu Yueyang Photovoltaic Technology Co., Ltd. 777 Tangqiao Road, High-tech Economic Zone, Jianhu County, Yancheng City, 224700 Jiangsu Province, P.R. China. |
| Factory inspection report no.: | 862010358.006 |
| Manufacturer 4: | Tangshan Haitai New Energy Technology Co., Ltd. Yutai Industrial Zone, Yutian, Tangshan City Hebei Province, 064100, P.R. China |
| Factory inspection report no.: | 862010687.001 |
| Manufacturer 5: | SIYANG TALESUN NEW ENERGY TECHNOLOGIES CO., LTD. No.211 Zhongxing East Road, Siyang Economic Development Zone, 223700 Suqian City, Jiangsu, China |
| Factory inspection report no.: | 862010690.001 |
| Manufacturer 6: | Peixian Talesun New Energy Technology Co., Ltd. 18 Hanrun Road, Peixian Economic Development Zone, 221600 Xuzhou City, Jiangsu, China |
| Factory inspection report no.: | 862010694.001 |



TÜV NORD CERT GmbH
Certification Body
Consumer Products

Manufacturer 7: **Zibo JinenU Solar Technology Co., LTD.**
3005, Silk Road, Zhoucun District,
Zibo, Shandong China

Factory inspection report no.: 862010689.001

Manufacturer 8: **Jiangsu Huapeng Photovoltaic Technology Co., LTD.**
No. 118, Jingang Road, Yangzhou economic and Technological
Development Zone, 225100 Yangzhou City, Jiangsu Province,
PEOPLE'S REPUBLIC OF CHINA

Factory inspection report no.: 862010695.001

Remark:

Factory inspection is mandatory to be performed annually. Please refer to factory inspection report for detailed information.



TÜV NORD CERT GmbH
Certification Body
Consumer Products

Description of product(s):

| | |
|------------------------------------|--|
| Module types: | PV Modules with Segmented 6" Mono-crystalline Silicon Solar Cells 408 cells: THxxxCM5-72S (xxx = 350-390, in increment of 5) 340 cells: THxxxCM5-60S (xxx = 290-325, in increment of 5) |
| Maximum system voltage: | 1500V |
| Fuse rating: | 20A |
| Electrical protection class: | Class II |
| Pollution degree: | 1 |
| Material group: | III or II or I, refer to CDF for details |
| Design load (positive / negative): | 2400Pa / 2400Pa or 3600Pa / 1600Pa , refer to CDF for details |
| Safety factors: | 1.5 |
| Fire safety class: | Class C according to ANSI/UL 1703-2018 (as per ANSI/UL 790-2018) |

| | |
|---------------|--|
| Module types: | PV Modules with Segmented 6" PERC Mono-crystalline Silicon Solar Cells 432 cells: THxxxPM5-78S (xxx = 445-480, in increment of 5) 432 cells: THxxxPM5-78SA (xxx = 445-480, in increment of 5) 432 cells: THxxxPM5-78SAF (xxx = 445-480, in increment of 5) 432 cells: THxxxPM5-78SAS (xxx = 445-480, in increment of 5) 432 cells: THxxxPMB5-78S (xxx = 445-480, in increment of 5) 432 cells: THxxxPMB5-78SA (xxx = 445-480, in increment of 5) 432 cells: THxxxPMB5-78SAF (xxx = 445-480, in increment of 5) 432 cells: THxxxPMB5-78SAS (xxx = 445-480, in increment of 5) 408 cells: THxxxPM5-72S (xxx = 395-455, in increment of 5) 408 cells: THxxxPM5-72SA (xxx = 420-455, in increment of 5) 408 cells: THxxxPM5-72SAF (xxx = 420-455, in increment of 5) 408 cells: THxxxPM5-72SAS (xxx = 420-455, in increment of 5) 408 cells: THxxxPM5-72SB (xxx = 460-500, in increment of 5) 408 cells: THxxxPM5-72SBF (xxx = 460-500, in increment of 5) 408 cells: THxxxPM5-72SBS (xxx = 460-500, in increment of 5) 408 cells: THxxxPMB5-72SB (xxx = 460-505, in increment of 5) 408 cells: THxxxPMB5-72SBF (xxx = 460-500, in increment of 5) 408 cells: THxxxPMB5-72SBS (xxx = 460-505, in increment of 5) 408 cells: THxxxPM5-72SF (xxx = 395-435, in increment of 5) 408 cells: THxxxPM5-72SS (xxx = 395-435, in increment of 5) 408 cells: THxxxPMB5-72S (xxx = 395-455, in increment of 5) 408 cells: THxxxPMB5-72SA (xxx = 420-455, in increment of 5) |
|---------------|--|



TÜV NORD CERT GmbH
Certification Body
Consumer Products

408 cells: THxxxPMB5-72SAF (xxx = 420-455, in increment of 5)
408 cells: THxxxPMB5-72SAS (xxx = 420-455, in increment of 5)
408 cells: THxxxPMB5-72SF (xxx = 395-435, in increment of 5)
408 cells: THxxxPMB5-72SS (xxx = 395-435, in increment of 5)
360 cells: THxxxPM5-66S (xxx = 370-400, in increment of 5)
360 cells: THxxxPM5-66SA (xxx = 370-400, in increment of 5)
360 cells: THxxxPM5-66SAF (xxx = 370-400, in increment of 5)
360 cells: THxxxPM5-66SAS (xxx = 370-400, in increment of 5)
360 cells: THxxxPMB5-66S (xxx = 370-400, in increment of 5)
360 cells: THxxxPMB5-66SA (xxx = 370-400, in increment of 5)
360 cells: THxxxPMB5-66SAF (xxx = 370-400, in increment of 5)
360 cells: THxxxPMB5-66SAS (xxx = 370-400, in increment of 5)
340 cells: THxxxPM5-60S (xxx = 325-380, in increment of 5)
340 cells: THxxxPM5-60SA (xxx = 350-380, in increment of 5)
340 cells: THxxxPM5-60SAF (xxx = 350-380, in increment of 5)
340 cells: THxxxPM5-60SAS (xxx = 350-380, in increment of 5)
340 cells: THxxxPM5-60SB (xxx = 380-415, in increment of 5)
340 cells: THxxxPM5-60SBF (xxx = 380-415, in increment of 5)
340 cells: THxxxPM5-60SBS (xxx = 380-415, in increment of 5)
340 cells: THxxxPMB5-60SB (xxx = 380-420, in increment of 5)
340 cells: THxxxPMB5-60SBF (xxx = 380-415, in increment of 5)
340 cells: THxxxPMB5-60SBS (xxx = 380-420, in increment of 5)
340 cells: THxxxPM5-60SF (xxx = 325-360, in increment of 5)
340 cells: THxxxPM5-60SS (xxx = 325-360, in increment of 5)
340 cells: THxxxPMB5-60S (xxx = 325-380, in increment of 5)
340 cells: THxxxPMB5-60SA (xxx = 350-380, in increment of 5)
340 cells: THxxxPMB5-60SAF (xxx = 350-380, in increment of 5)
340 cells: THxxxPMB5-60SAS (xxx = 350-380, in increment of 5)
340 cells: THxxxPMB5-60SF (xxx = 325-360, in increment of 5)
340 cells: THxxxPMB5-60SS (xxx = 325-360, in increment of 5)

Maximum system voltage: 1500V
Fuse rating: 20A
Electrical protection class: Class II
Pollution degree: 1
Material group: III or II or I, refer to CDF for details
Design load (positive / negative): 2400Pa / 2400Pa or 3600Pa / 1600Pa, refer to CDF for details
Safety factors: 1.5
Fire safety class: Class C according to ANSI/UL 1703-2018 (as per ANSI/UL 790-2018)



TÜV NORD CERT GmbH
Certification Body
Consumer Products

Module types:

PV Modules with Segmented 8" PERC Mono-crystalline Silicon Solar Cells

408 cells: THxxxPM6-68SC (xxx = 635-655, in increment of 5)

408 cells: THxxxPMB6-68SC (xxx = 635-660, in increment of 5)

414 cells: THxxxPM6-69SC (xxx = 645-655, in increment of 5)

414 cells: THxxxPMB6-69SC (xxx = 645-670, in increment of 5)

390 cells: THxxxPM6-65SC (xxx = 605-625, in increment of 5)

390 cells: THxxxPMB6-65SC (xxx = 605-630, in increment of 5)

340 cells: THxxxPM6-57SC (xxx = 530-545, in increment of 5)

340 cells: THxxxPMB6-57SC (xxx = 530-550, in increment of 5)

345 cells: THxxxPM6-58SC (xxx = 535-550, in increment of 5)

345 cells: THxxxPMB6-58SC (xxx = 535-555, in increment of 5)

325 cells: THxxxPM6-54SC (xxx = 505-520, in increment of 5)

325 cells: THxxxPMB6-54SC (xxx = 505-525, in increment of 5)

320 cells: THxxxPMB7-46SC (xxx = 425-445, in increment of 5)

320 cells: THxxxPMB7-46SCS (xxx = 425-445, in increment of 5)

320 cells: THxxxPMB7-46SCF (xxx = 420-440, in increment of 5)

305 cells: THxxxPMB7-44SC (xxx = 405-425, in increment of 5)

305 cells: THxxxPMB7-44SCS (xxx = 405-425, in increment of 5)

305 cells: THxxxPMB7-44SCF (xxx = 400-420, in increment of 5)

Maximum system voltage:

1500V

Fuse rating:

30A or 25A, refer to CDF for details

Electrical protection class:

Class II

Pollution degree:

1

Material group:

III or II or I, refer to CDF for details

Design load (positive / negative):

3600Pa / 1600Pa, refer to CDF for details

Safety factors:

1.5

Fire safety class:

Class C according to ANSI/UL 1703-2018 (as per ANSI/UL 790-2018)



TÜV NORD CERT GmbH
Certification Body
Consumer Products

Module types:

PV Modules with Half-cut 7" PERC Mono-crystalline Silicon Solar Cells:

156 cells: TWxxxMGP-156-H (xxx = 570-605, in increment of 5)
156 cells: TWxxxMGP-156-H-S (xxx = 570-605, in increment of 5)
156 cells: TWxxxMGP-156-H-F (xxx = 570-605, in increment of 5)
144 cells: TWxxxMAP-144-H (xxx = 530-565, in increment of 5)
144 cells: TWxxxMAP-144-H-S (xxx = 530-565, in increment of 5)
144 cells: TWxxxMAP-144-H-F (xxx = 530-565, in increment of 5)
144 cells: TWxxxMGP-144-H (xxx = 525-555, in increment of 5)
144 cells: TWxxxMGP-144-H-S (xxx = 525-555, in increment of 5)
144 cells: TWxxxMGP-144-H-F (xxx = 525-555, in increment of 5)
120 cells: TWxxxMAP-120-H (xxx = 440-470, in increment of 5)
120 cells: TWxxxMAP-120-H-S (xxx = 440-470, in increment of 5)
120 cells: TWxxxMAP-120-H-F (xxx = 440-470, in increment of 5)
120 cells: TWxxxMGP-120-H (xxx = 440-465, in increment of 5)
120 cells: TWxxxMGP-120-H-S (xxx = 440-465, in increment of 5)
120 cells: TWxxxMGP-120-H-F (xxx = 440-465, in increment of 5)
108 cells: TWxxxMAP-108-H (xxx = 400-420, in increment of 5)
108 cells: TWxxxMAP-108-H-S (xxx = 400-420, in increment of 5)
108 cells: TWxxxMAP-108-H-F (xxx = 400-420, in increment of 5)
108 cells: TWxxxMGP-108-H (xxx = 395-415, in increment of 5)
108 cells: TWxxxMGP-108-H-S (xxx = 395-415, in increment of 5)
108 cells: TWxxxMGP-108-H-F (xxx = 395-415, in increment of 5)

Maximum system voltage: 1500V
Fuse rating: 25A or 20A, refer to CDF for details
Electrical protection class: Class II
Pollution degree: 1
Material group: I
Design load (positive / negative): 3600Pa / 1600Pa, refer to CDF for details
Safety factors: 1.5
Fire safety class: Class C according to ANSI/UL 1703-2018 (as per ANSI/UL 790-2018)



TÜV NORD CERT GmbH
Certification Body
Consumer Products

Module types:

PV Modules with Half-cut 8" PERC Mono-crystalline Silicon Solar Cells:

132 cells: TWxxxMCP-132-H (xxx = 640-670, in increment of 5)

132 cells: TWxxxMCP-132-H-S (xxx = 640-670, in increment of 5)

132 cells: TWxxxMCP-132-H-F (xxx = 640-670, in increment of 5)

120 cells: TWxxxMCP-120-H (xxx = 580-610, in increment of 5)

120 cells: TWxxxMCP-120-H-S (xxx = 580-610, in increment of 5)

120 cells: TWxxxMCP-120-H-F (xxx = 580-610, in increment of 5)

108 cells: TWxxxMCP-108-H (xxx = 525-545, in increment of 5)

108 cells: TWxxxMCP-108-H-S (xxx = 525-545, in increment of 5)

108 cells: TWxxxMCP-108-H-F (xxx = 525-545, in increment of 5)

110 cells: TWxxxMIP-110-H (xxx = 535-555, in increment of 5)

110 cells: TWxxxMIP-110-H-S (xxx = 535-555, in increment of 5)

110 cells: TWxxxMIP-110-H-F (xxx = 535-555, in increment of 5)

100 cells: TWxxxMIP-100-H (xxx = 485-505, in increment of 5)

100 cells: TWxxxMIP-100-H-S (xxx = 485-505, in increment of 5)

100 cells: TWxxxMIP-100-H-F (xxx = 485-505, in increment of 5)

Maximum system voltage:

1500V

Fuse rating:

30A or 25A, refer to CDF for details

Electrical protection class:

Class II

Pollution degree:

1

Material group:

I

Design load (positive / negative):

3600Pa / 1600Pa, refer to CDF for details

Safety factors:

1.5

Fire safety class:

Class C according to ANSI/UL 1703-2018 (as per ANSI/UL 790-2018)

Remark:

For detailed product information, please refer to CDF (Constructional Data Form) in Annex 1 of test report.



TÜV NORD CERT GmbH
Certification Body
Consumer Products