

CERTIFICATE

TÜV NORD CERT GmbH
herewith declares that

TommaTech GmbH
Angerlweg 14 85748 Garching b. Munich,
Germany

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: 2023-06-27
Valid until: 2029-01-24

Certification program: P12-VA-01 Rev. 17 09.20
Certification fundamental(s): P12.4-AA-04 Rev. 00
(IEC 60068-2-68:1994 modified)
Remark: Test Method Lc2;
Dust concentration: $5 \pm 1.5 \text{g/m}^3$;
Wind velocity: $20 \pm 2 \text{m/s}$;
Test duration: 4 hours each side.
Registered No.: 44 780 23 406749 - 180
Manufacturer: see Annex 1
Test Report No.: 492012519.001
File No.: PVP05132/23P-03



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Essen, 2023-06-27

Please also pay attention to the information stated overleaf.

Description of product(s):

Module types: **PV Modules with Segmented 6" PERC Mono-crystalline Silicon Solar Cells:**
408 cells: TTxxx-72PMSH (xxx=460-505, in increment of 5)
408 cells: TTxxx-72PMSHFB (xxx=460-500, in increment of 5)
408 cells: TTxxx-72PMSHF (xxx=460-505, in increment of 5)
340 cells: TTxxx-60PMSH (xxx=380-420, in increment of 5)
340 cells: TTxxx-60PMSHFB (xxx=380-415, in increment of 5)
340 cells: TTxxx-60PMSHF (xxx=380-420, in increment of 5)

Maximum system voltage: 1500V
Fuse rating: 20A
Application class: Class A
Electrical protection class: Class II

Module types: **PV Modules with Segmented 8" PERC Mono-crystalline Silicon Solar Cells:**
408 cells: TTxxx-68PMSH (xxx=635-660, in increment of 5)
414 cells: TTxxx-69PMSH (xxx=645-670, in increment of 5)
390 cells: TTxxx-65PMSH (xxx=605-630, in increment of 5)
340 cells: TTxxx-57PMSH (xxx=530-550, in increment of 5)
345 cells: TTxxx-58PMSH (xxx=535-555, in increment of 5)
325 cells: TTxxx-54PMSH (xxx=505-525, in increment of 5)
320 cells: TTxxx-46PMSH (xxx=405-425, in increment of 5)
320 cells: TTxxx-46PMSHF (xxx=425-445, in increment of 5)
320 cells: TTxxx-46PMSHFB (xxx=420-440, in increment of 5)
305 cells: TTxxx-44PMSHF (xxx=405-425, in increment of 5)
305 cells: TTxxx-44PMSH (xxx=405-425, in increment of 5)
305 cells: TTxxx-44PMSHFB (xxx=400-420, in increment of 5)

Maximum system voltage: 1500V
Fuse rating: 30A or 25A
Application class: Class A
Electrical protection class: Class II



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

- 156 cells: TTxxx-156PM10 (xxx = 570-620, in increment of 5)
- 156 cells: TTxxx-156PMFB10 (xxx = 570-620, in increment of 5)
- 144 cells: TTxxx-144PM10 (xxx = 525-570, in increment of 5)
- 144 cells: TTxxx-144PMFB10 (xxx = 525-570, in increment of 5)
- 132 cells: TTxxx-132PM10 (xxx = 480-525, in increment of 5)
- 132 cells: TTxxx-132PMFB10 (xxx = 480-525, in increment of 5)
- 120 cells: TTxxx-120PM10 (xxx = 440-475, in increment of 5)
- 120 cells: TTxxx-120PMFB10 (xxx = 440-475, in increment of 5)
- 108 cells: TTxxx-108PM10 (xxx = 395-430, in increment of 5)
- 108 cells: TTxxx-108PMFB10 (xxx = 395-430, in increment of 5)

Maximum system voltage: 1500V
Fuse rating: 25A or 20A
Application class: Class A
Electrical protection class: Class II

Module types: **PV Modules with Half-cut 7" TOPCon Mono-crystalline Silicon Solar Cells:**

- 156 cells: TTxxx-156TN10 (xxx = 570-640, in increment of 5)
- 156 cells: TTxxx-156TNFB10 (xxx = 570-640, in increment of 5)
- 144 cells: TTxxx-144TN10 (xxx = 525-590, in increment of 5)
- 144 cells: TTxxx-144TNFB10 (xxx = 525-590, in increment of 5)
- 132 cells: TTxxx-132TN10 (xxx = 485-540, in increment of 5)
- 132 cells: TTxxx-132TNFB10 (xxx = 485-540, in increment of 5)
- 120 cells: TTxxx-120TN10 (xxx = 440-490, in increment of 5)
- 120 cells: TTxxx-120TNFB10 (xxx = 440-490, in increment of 5)
- 108 cells: TTxxx-108TN10 (xxx = 395-440, in increment of 5)
- 108 cells: TTxxx-108TNFB10 (xxx = 395-440, in increment of 5)

Maximum system voltage: 1500V
Fuse rating: 25A or 20A
Application class: Class A
Electrical protection class: Class II



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

132 cells: TTxxx-132PM12 (xxx = 640-695, in increment of 5)
132 cells: TTxxx-132PMFB12 (xxx = 640-695, in increment of 5)
120 cells: TTxxx-120PM12 (xxx = 580-630, in increment of 5)
120 cells: TTxxx-120PMFB12 (xxx = 580-630, in increment of 5)
108 cells: TTxxx-108PM12 (xxx = 525-565, in increment of 5)
108 cells: TTxxx-108PMFB12 (xxx = 525-565, in increment of 5)
110 cells: TTxxx-110PM12 (xxx = 535-580, in increment of 5)
110 cells: TTxxx-110PMFB12 (xxx = 535-580, in increment of 5)
100 cells: TTxxx-100PM12 (xxx = 485-525, in increment of 5)
100 cells: TTxxx-100PMFB12 (xxx = 485-525, in increment of 5)

Maximum system voltage: 1500V
Fuse rating: 30A or 25A
Application class: Class A
Electrical protection class: Class II

Module types: PV Modules with Half-cut 8" TOPCon Mono-crystalline Silicon Solar Cells:

132 cells: TTxxx-132TN12 (xxx = 650-700, in increment of 5)
132 cells: TTxxx-132TNFB12 (xxx = 650-700, in increment of 5)
120 cells: TTxxx-120TN12 (xxx = 590-635, in increment of 5)
120 cells: TTxxx-120TNFB12 (xxx = 590-635, in increment of 5)
108 cells: TTxxx-108TN12 (xxx = 530-570, in increment of 5)
108 cells: TTxxx-108TNFB12 (xxx = 530-570, in increment of 5)
110 cells: TTxxx-110TN12 (xxx = 540-580, in increment of 5)
110 cells: TTxxx-110TNFB12 (xxx = 540-580, in increment of 5)
100 cells: TTxxx-100TN12 (xxx = 490-530, in increment of 5)
100 cells: TTxxx-100TNFB12 (xxx = 490-530, in increment of 5)

Maximum system voltage: 1500V
Fuse rating: 30A or 25A
Application class: Class A
Electrical protection class: Class II

Remark:
For detailed product information, please refer to test report.



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