

CDF (Constructional Data Form) for Electrical Products

Applicant	Tongwei Co., Ltd. No. 588, Middle Section Tianfu Avenue, High-Tech Zone, Chengdu, China (Sichuan) Pilot Free Trade Zone
Manufacturer	Tongwei Co., Ltd. No. 588, Middle Section Tianfu Avenue, High-Tech Zone, Chengdu, China (Sichuan) Pilot Free Trade Zone
Factory 1	Tongwei Solar (Hefei) Co., Ltd. No.888, Changning Road, High-tech District, Hefei City, Anhui Province, 230088, P.R. China
Factory 2	Tongwei Solar (Yancheng) Co., Ltd. No. 88, Jiuhuashan Road, Economic Development Zone, Yancheng City, Jiangsu Province, China
Factory 3	Tongwei Solar (Sichuan) Co., Ltd. No.888, Jilin East Road, Huai Kou Street, Jintang County, Chengdu City, Sichuan Province
Factory 4	Tongwei Solar (Nantong) Co., LTD No. 8, Bonded 10 Road, Economic Development Zone, Nantong City, Jiangsu Province, P. R. China
Factory 5	Tongwei Solar (Chengdu) Co., LTD No. 888, Linjiaci Road, Huangjia Subdistrict, Shuangliu District, Chengdu City, Sichuan Province, China
Product	Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
Standard(s)	IEC 61215-1:2021 / EN IEC 61215-1:2021 IEC 61215-1-1:2021 / EN IEC 61215-1-1:2021 IEC 61215-2:2021 / EN IEC 61215-2:2021 IEC 61730-1:2023 IEC 61730-2:2023 EN IEC 61730-1:2018 EN IEC 61730-2:2018
Trade mark	 通威太阳能  TW SOLAR
Module type(s)	Double Glass PV Modules with Half-cut 7" TOPCon Mono-crystalline Silicon Solar Cells: 156 cells: TWMND-78HDxxx (xxx = 580-650, in increment of 5) 144 cells: TWMND-72HDxxx (xxx = 535-600, in increment of 5) 132 cells: TWMND-66HDxxx (xxx = 490-550, in increment of 5) 120 cells: TWMND-60HDxxx (xxx = 445-500, in increment of 5) 108 cells: TWMND-54HDxxx (xxx = 400-450, in increment of 5) 144 cells: TWMNG-72HDxxx (xxx = 580-615, in increment of 5)

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	120 cells: TWMNG-60HDxxx (xxx = 485-510, in increment of 5) 120 cells: TWMNG-60HCxxx (xxx = 485-510, in increment of 5) 108 cells: TWMNG-54HDxxx (xxx = 435-460, in increment of 5) 108 cells: TWMNG-54HCxxx (xxx = 435-460, in increment of 5) 132 cells: TWMNH-66HDxxx (xxx = 580-655, in increment of 5) 120 cells: TWMNH-60HDxxx (xxx = 530-595, in increment of 5) 108 cells: TWMNH-54HDxxx (xxx = 475-535, in increment of 5) 108 cells: TWMNH-54HCxxx (xxx = 475-535, in increment of 5) 96 cells: TWMNH-48HDxxx (xxx = 420-475, in increment of 5) 96 cells: TWMNH-48HCxxx (xxx = 420-475, in increment of 5) 96 cells: TWMNH-48HExxx (xxx = 425-475, in increment of 5) 96 cells: TWMNH-48HWxxx (xxx = 425-475, in increment of 5) Double Glass PV Modules with Half-cut 8" TOPCon Mono-crystalline Silicon Solar Cells: 132 cells: TWMNF-66HDxxx (xxx = 665-755, in increment of 5) 120 cells: TWMNF-60HDxxx (xxx = 605-685, in increment of 5) 108 cells: TWMNF-54HDxxx (xxx = 545-615, in increment of 5) 110 cells: TWMNF-55HDxxx (xxx = 530-565, in increment of 5) 100 cells: TWMNF-50HDxxx (xxx = 480-510, in increment of 5) Double Glass PV Modules with Half-cut 7" PERC Mono-crystalline Silicon Solar Cells: 156 cells: TWMPD-78HDxxx (xxx = 570-615, in increment of 5) 144 cells: TWMPD-72HDxxx (xxx = 525-565, in increment of 5) 132 cells: TWMPD-66HDxxx (xxx = 480-520, in increment of 5) 120 cells: TWMPD-60HDxxx (xxx = 440-470, in increment of 5) 108 cells: TWMPD-54HDxxx (xxx = 395-425, in increment of 5) 144 cells: TWMPG-72HDxxx (xxx = 560-590, in increment of 5) 108 cells: TWMPG-54HDxxx (xxx = 420-440, in increment of 5) 108 cells: TWMPG-54HCxxx (xxx = 420-440, in increment of 5) 132 cells: TWMPH-66HDxxx (xxx = 575-585, in increment of 5) 120 cells: TWMPH-60HDxxx (xxx = 525-530, in increment of 5) 96 cells: TWMPH-48HDxxx (xxx = 420-425, in increment of 5) 96 cells: TWMPH-48HCxxx (xxx = 420-425, in increment of 5) Double Glass PV Modules with Half-cut 8" PERC Mono-crystalline Silicon Solar Cells: 132 cells: TWMPF-66HDxxx (xxx = 635-685, in increment of 5) 120 cells: TWMPF-60HDxxx (xxx = 580-620, in increment of 5) 108 cells: TWMPF-54HDxxx (xxx = 520-560, in increment of 5) 110 cells: TWMPF-55HDxxx (xxx = 530-565, in increment of 5) 100 cells: TWMPF-50HDxxx (xxx = 480-510, in increment of 5) Double Glass PV Modules with Half-cut 8" HJT Mono-crystalline Silicon Solar Cells: 132 cells: TWMHF-66HDxxx (xxx = 660-740 in increment of 5)
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	120 cells: TWMHF-60HDxxx (xxx = 600-670, in increment of 5) Double Glass PV Modules with Half-cut 7" TBC Mono-crystalline Silicon Solar Cells: 132 cells: TWMBH-66HDxxx (xxx = 635-670, in increment of 5) 120 cells: TWMBH-60HDxxx (xxx = 580-610, in increment of 5) 108 cells: TWMBH-54HDxxx (xxx = 520-545, in increment of 5) 96 cells: TWMBH-48HDxxx (xxx = 460-485, in increment of 5) Double Glass PV Modules with 1/3 cut 7" TOPCon Mono-crystalline Silicon Solar Cells: 198 cells: TWMNH-66TDxxx (xxx = 615-670, in increment of 5) 180 cells: TWMNH-60TDxxx (xxx = 560-610, in increment of 5) 162 cells: TWMNH-54TDxxx (xxx = 505-545, in increment of 5) 144 cells: TWMNH-48TDxxx (xxx = 450-485, in increment of 5) Double Glass PV Modules with 1/4 cut 7" TOPCon Mono-crystalline Silicon Solar Cells: 264 cells: TWMNH-66QDxxx (xxx = 615-670, in increment of 5) 240 cells: TWMNH-60QDxxx (xxx = 560-610, in increment of 5) 216 cells: TWMNH-54QDxxx (xxx = 505-545, in increment of 5) 204 cells: TWMNH-51QDxxx (xxx = 475-515, in increment of 5) 192 cells: TWMNH-48QDxxx (xxx = 450-485, in increment of 5) 192 cells: TWMNH-48QExxx (xxx = 450-495, in increment of 5) 192 cells: TWMNH-48QWxxx (xxx = 450-495, in increment of 5) Double Glass PV Modules with 1/4 cut 8" TOPCon Mono-crystalline Silicon Solar Cells: 264 cells: TWMNF-66QDxxx (xxx = 700-770, in increment of 5) Double Glass PV Modules with 1/3 cut 8" HJT Mono-crystalline Silicon Solar Cells: 198 cells: TWMHF-66TDxxx (xxx = 720-770, in increment of 5) Remark: xxx indicates rated output power generated from front side under STC
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1. Electrical ratings and product description:

Double Glass PV Modules with Half-cut 7" TOPCon Mono-crystalline Silicon Solar Cells:

Module type	156 cells: TWMND-78HDxxx (xxx = 580-650, in increment of 5) for cell 1, 13									
Dimensions [mm] / l x w x h.....	2465±2 x 1134±2 x 30 / 35									
Min-distance between strings [mm]	1.8					Min-creepage distance [mm]			12.925	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140			Class II	
Design load (positive) [Pa]	See remark (3)					Safety factor (positive)			1.5	
Design load (negative) [Pa]	See remark (3)					Safety factor (negative).....			1.5	
Maximum overcurrent protection rating [A]:	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	55.00	55.20	55.40	55.60	55.80	56.00	56.20	56.40	56.60	56.80
Rated Isc at STC [A] / tolerance ±3%	13.44	13.47	13.50	13.53	13.56	13.59	13.62	13.65	13.70	13.74
Rated Vmp at STC [V].....	46.20	46.37	46.54	46.70	46.87	47.04	47.21	47.38	47.54	47.71
Rated Imp at STC [A]	12.56	12.62	12.68	12.74	12.81	12.87	12.93	12.99	13.05	13.10
Rated Pmax at STC [W] / tolerance ±3%..	580	585	590	595	600	605	610	615	620	625
Bifaciality coefficient with tolerance	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%.....	55.00	55.20	55.40	55.60	55.80	56.00	56.20	56.40	56.60	56.80
Rated Isc at BNPI [A] / tolerance ±3%	14.84	14.87	14.90	14.94	14.97	15.00	15.04	15.07	15.12	15.17
Rated Vmp at BNPI [V].....	46.20	46.37	46.54	46.70	46.87	47.04	47.21	47.38	47.54	47.71
Rated Imp at BNPI [A]	13.87	13.93	14.00	14.06	14.14	14.21	14.27	14.34	14.41	14.46
Rated Pmax at BNPI [W] / tolerance±3%..	640.8	645.9	651.5	656.7	662.8	668.4	673.7	679.4	685.1	689.9
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%.....	16.54	16.58	16.62	16.66	16.69	16.73	16.77	16.8	16.86	16.91
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	57.00	57.20	57.40	57.60	57.80	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±3%	13.78	13.82	13.86	14.05	14.10	-	-	-	-	-
Rated Vmp at STC [V].....	47.88	48.05	48.22	48.36	48.52	-	-	-	-	-
Rated Imp at STC [A]	13.16	13.22	13.28	13.34	13.40	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%..	630	635	640	645	650	-	-	-	-	-
Bifaciality coefficient with tolerance	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%.....	57.00	57.20	57.40	57.60	57.80	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±3%	15.21	15.26	15.30	15.51	15.57	-	-	-	-	-
Rated Vmp at BNPI [V]	47.88	48.05	48.22	48.36	48.52	-	-	-	-	-

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Rated Imp at BNPI [A]	14.53	14.59	14.66	14.73	14.79	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%...	695.7	701.0	706.8	712.3	717.6	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%.....	16.96	17.01	17.06	17.30	17.36	-	-	-	-	-

Module type	144 cells: TWMND-72HDxxx (xxx = 535-600, in increment of 5) for cell 1, 13									
Dimensions [mm] / l x w x h.....	2278±2 x 1134±2 x 30 / 35									
Min-distance between strings [mm]	1.8				Min-creepage distance [mm].....:				12.2	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140				Class II	
Design load (positive) [Pa]	See remark (3)				Safety factor (positive)				1.5	
Design load (negative) [Pa]	See remark (3)				Safety factor (negative).....:				1.5	
Maximum overcurrent protection rating [A]:	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	50.50	50.70	50.90	51.10	51.30	51.50	51.70	51.90	52.10	52.30
Rated Isc at STC [A] / tolerance ±3%	13.40	13.45	13.50	13.55	13.60	13.65	13.70	13.75	13.80	13.85
Rated Vmp at STC [V].....	42.42	42.59	42.76	42.92	43.09	43.26	43.43	43.60	43.76	43.93
Rated Imp at STC [A]	12.62	12.68	12.75	12.82	12.88	12.95	13.02	13.08	13.14	13.21
Rated Pmax at STC [W] / tolerance ±3%..	535	540	545	550	555	560	565	570	575	580
Bifaciality coefficient with tolerance	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%.....	50.50	50.70	50.90	51.10	51.30	51.50	51.70	51.90	52.10	52.30
Rated Isc at BNPI [A] / tolerance ±3%	14.79	14.85	14.90	14.96	15.01	15.07	15.12	15.18	15.23	15.29
Rated Vmp at BNPI [V].....	42.42	42.59	42.76	42.92	43.09	43.26	43.43	43.60	43.76	43.93
Rated Imp at BNPI [A]	13.93	14.00	14.08	14.15	14.22	14.30	14.37	14.44	14.51	14.58
Rated Pmax at BNPI [W] / tolerance±3%..	590.9	596.2	602.0	607.4	612.8	618.6	624.1	629.5	635.0	640.5
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%.....	16.50	16.56	16.62	16.68	16.74	16.8	16.86	16.93	16.99	17.05
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	52.50	52.70	53.20	53.40	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±3%	13.90	13.95	14.15	14.20	-	-	-	-	-	-
Rated Vmp at STC [V].....	44.10	44.27	44.41	44.55	-	-	-	-	-	-
Rated Imp at STC [A]	13.27	13.33	13.40	13.47	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%...	585	590	595	600	-	-	-	-	-	-
Bifaciality coefficient with tolerance	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									

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Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 3\%$:	52.50	52.70	53.20	53.40	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance $\pm 3\%$:	15.34	15.40	15.62	15.68	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	44.10	44.27	44.41	44.55	-	-	-	-	-	-
Rated Imp at BNPI [A]	14.65	14.72	14.79	14.87	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	646.1	651.6	656.8	662.5	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 3\%$:	17.11	17.17	17.42	17.48	-	-	-	-	-	-

Module type :	132 cells: TWMND-66HDxxx (xxx = 490-550, in increment of 5) for cell 1, 13									
Dimensions [mm] / l x w x h..... :	2093±2 x 1134±2 x 30 / 35									
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm] :				12.375	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	46.35	46.55	46.75	46.95	47.15	47.35	47.55	47.75	47.95	48.15
Rated Isc at STC [A] / tolerance ±3% :	13.42	13.47	13.52	13.57	13.62	13.67	13.72	13.76	13.80	13.84
Rated Vmp at STC [V]..... :	38.93	39.10	39.27	39.44	39.61	39.77	39.94	40.11	40.28	40.45
Rated Imp at STC [A] :	12.59	12.66	12.74	12.81	12.88	12.95	13.02	13.09	13.16	13.23
Rated Pmax at STC [W] / tolerance ±3%.. :	490	495	500	505	510	515	520	525	530	535
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	46.35	46.55	46.75	46.95	47.15	47.35	47.55	47.75	47.95	48.15
Rated Isc at BNPI [A] / tolerance ±3% :	14.82	14.87	14.93	14.98	15.04	15.09	15.15	15.19	15.23	15.28
Rated Vmp at BNPI [V]..... :	38.93	39.10	39.27	39.44	39.61	39.77	39.94	40.11	40.28	40.45
Rated Imp at BNPI [A] :	13.90	13.98	14.06	14.14	14.22	14.30	14.37	14.45	14.53	14.61
Rated Pmax at BNPI [W] / tolerance±3%.. :	541.2	546.6	552.1	557.7	563.2	568.8	574.0	579.6	585.2	590.9
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	16.52	16.58	16.64	16.7	16.77	16.83	16.89	16.94	16.99	17.04
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	48.35	48.80	49.00	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±3% :	13.88	14.15	14.20	-	-	-	-	-	-	-

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Rated Vmp at STC [V]..... :	40.61	40.74	40.87	-	-	-	-	-	-	-
Rated Imp at STC [A] :	13.30	13.38	13.46	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	540	545	550	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance :	φIsc=80%±5%, φVoc= 98%±5%, φPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	48.35	48.80	49.00	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±3% :	15.32	15.62	15.68	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	40.61	40.74	40.87	-	-	-	-	-	-	-
Rated Imp at BNPI [A] :	14.68	14.77	14.86	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	596.2	601.7	607.3	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	17.09	17.42	17.48	-	-	-	-	-	-	-

Module type	120 cells: TWMND-60HDxxx (xxx = 445-500, in increment of 5) for cell 1, 13									
Dimensions [mm] / l x w x h..... :	1908±2 x 1134±2 x 30 / 35									
Min-distance between strings [mm]	1.8				Min-creepage distance [mm]..... :				12.6	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140				Class II	
Design load (positive) [Pa]	See remark (3)				Safety factor (positive)				1.5	
Design load (negative) [Pa]..... :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	42.35	42.52	42.69	42.86	43.03	43.20	43.37	43.54	43.71	43.88
Rated Isc at STC [A] / tolerance ±3%	13.50	13.54	13.58	13.62	13.66	13.70	13.74	13.78	13.82	13.86
Rated Vmp at STC [V]..... :	35.57	35.72	35.86	36.00	36.15	36.29	36.43	36.57	36.72	36.86
Rated Imp at STC [A]	12.51	12.60	12.69	12.78	12.87	12.96	13.04	13.13	13.21	13.30
Rated Pmax at STC [W] / tolerance ±3%....:	445	450	455	460	465	470	475	480	485	490
Bifaciality coefficient with tolerance	φIsc=80%±5%, φVoc= 98%±5%, φPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%	42.35	42.52	42.69	42.86	43.03	43.20	43.37	43.54	43.71	43.88
Rated Isc at BNPI [A] / tolerance ±3%	14.90	14.95	14.99	15.04	15.08	15.12	15.17	15.21	15.26	15.30
Rated Vmp at BNPI [V]	35.57	35.72	35.86	36.00	36.15	36.29	36.43	36.57	36.72	36.86
Rated Imp at BNPI [A]	13.81	13.91	14.01	14.11	14.21	14.31	14.40	14.49	14.58	14.68
Rated Pmax at BNPI [W] / tolerance±3% ...:	491.3	496.8	502.4	508.0	513.6	519.3	524.6	530.0	535.3	541.1
Electrical ratings at irradiance level at aBSI										

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Rated Isc at aBSI [A] / tolerance ±3%.....:	16.62	16.67	16.72	16.77	16.82	16.86	16.91	16.96	17.01	17.06
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	44.35	44.52	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±3%	14.18	14.23	-	-	-	-	-	-	-	-
Rated Vmp at STC [V].....:	36.98	37.16	-	-	-	-	-	-	-	-
Rated Imp at STC [A]	13.39	13.46	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%....:	495	500	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance	φIsc=80%±5%, φVoc= 98%±5%, φPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%	44.35	44.52	-	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±3%	15.65	15.71	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]	36.98	37.16	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A]	14.78	14.86	-	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3% ...:	546.6	552.2	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%.....:	17.46	17.52	-	-	-	-	-	-	-	-

Module type :	108 cells: TWMND-54HDxxx (xxx = 400-450, in increment of 5) for cell 1, 13									
Dimensions [mm] / l x w x h..... :	1722±2 x 1134±2 x 30 / 35									
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm]..... :				12.375	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	38.15	38.30	38.45	38.60	38.75	38.90	39.05	39.20	39.35	39.95
Rated Isc at STC [A] / tolerance ±3% :	13.55	13.59	13.63	13.67	13.71	13.75	13.79	13.83	13.87	14.15
Rated Vmp at STC [V]..... :	32.05	32.17	32.30	32.42	32.55	32.68	32.80	32.93	33.05	33.20
Rated Imp at STC [A] :	12.49	12.59	12.70	12.80	12.91	13.01	13.11	13.22	13.32	13.41
Rated Pmax at STC [W] / tolerance ±3%... :	400	405	410	415	420	425	430	435	440	445
Bifaciality coefficient with tolerance :	φIsc=80%±5%, φVoc= 98%±5%, φPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	38.15	38.30	38.45	38.60	38.75	38.90	39.05	39.20	39.35	39.95
Rated Isc at BNPI [A] / tolerance ±3% :	14.96	15.00	15.05	15.09	15.14	15.18	15.22	15.27	15.31	15.62

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Rated Vmp at BNPI [V]..... :	32.05	32.17	32.30	32.42	32.55	32.68	32.80	32.93	33.05	33.20
Rated Imp at BNPI [A] :	13.79	13.90	14.02	14.13	14.25	14.36	14.47	14.59	14.70	14.80
Rated Pmax at BNPI [W] / tolerance±3%.. :	441.9	447.2	452.8	458.2	463.8	469.2	474.6	480.4	485.9	491.4
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	16.68	16.73	16.78	16.83	16.88	16.93	16.98	17.02	17.07	17.42
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	40.10	-	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±3% :	14.20	-	-	-	-	-	-	-	-	-
Rated Vmp at STC [V]..... :	33.35	-	-	-	-	-	-	-	-	-
Rated Imp at STC [A] :	13.50	-	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	450	-	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance :	φIsc=80%±5%, φVoc= 98%±5%, φPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	40.10	-	-	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±3% :	15.68	-	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	33.35	-	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A] :	14.90	-	-	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	496.9	-	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	17.48	-	-	-	-	-	-	-	-	-

Module type :	144 cells: TWMNG-72HDxxx (xxx = 580-615, in increment of 5) for cell 1, 13									
Dimensions [mm] / l x w x h..... :	2382±2 x 1134±2 x 30									
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm]..... :				12.2	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	51.00	51.20	51.40	51.60	51.80	52.00	52.20	52.40	-	-
Rated Isc at STC [A] / tolerance ±3% :	14.28	14.33	14.38	14.43	14.48	14.53	14.58	14.63	-	-
Rated Vmp at STC [V]..... :	43.80	44.00	44.20	44.40	44.60	44.80	45.00	45.20	-	-
Rated Imp at STC [A] :	13.25	13.30	13.35	13.41	13.46	13.51	13.56	13.61	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	580	585	590	595	600	605	610	615	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Bifaciality coefficient with tolerance :	ϕlsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	51.00	51.20	51.40	51.60	51.80	52.00	52.20	52.40	-	-
Rated Isc at BNPI [A] / tolerance ±3% :	15.76	15.82	15.87	15.93	15.99	16.04	16.10	16.15	-	-
Rated Vmp at BNPI [V]..... :	43.80	44.00	44.20	44.40	44.60	44.80	45.00	45.20	-	-
Rated Imp at BNPI [A] :	14.63	14.68	14.74	14.80	14.86	14.91	14.97	15.02	-	-
Rated Pmax at BNPI [W] / tolerance±3%... :	640.8	645.9	651.5	657.1	662.8	668.0	673.7	678.9	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	17.58	17.64	17.7	17.76	17.82	17.89	17.95	18.01	-	-

Module type	120 cells: TWMNG-60HDxxx (xxx = 485-510, in increment of 5) 120 cells: TWMNG-60HCxxx (xxx = 485-510, in increment of 5) for cell 1, 13									
Dimensions [mm] / l x w x h.....	1994±2 x 1134±2 x 30									
Min-distance between strings [mm]	1.8				Min-creepage distance [mm]				12.6	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140				Class II	
Design load (positive) [Pa]	See remark (3)				Safety factor (positive)				1.5	
Design load (negative) [Pa]	See remark (3)				Safety factor (negative).....				1.5	
Maximum overcurrent protection rating [A]:	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	42.70	42.87	43.04	43.21	43.38	43.55	-	-	-	-
Rated Isc at STC [A] / tolerance ±3%	14.35	14.40	14.45	14.50	14.55	14.60	-	-	-	-
Rated Vmp at STC [V].....	36.45	36.62	36.79	36.96	37.13	37.30	-	-	-	-
Rated Imp at STC [A]	13.31	13.39	13.46	13.53	13.61	13.68	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%...	485	490	495	500	505	510	-	-	-	-
Bifaciality coefficient with tolerance	ϕlsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%.....	42.70	42.87	43.04	43.21	43.38	43.55	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±3%	15.84	15.90	15.95	16.01	16.06	16.12	-	-	-	-
Rated Vmp at BNPI [V].....	36.45	36.62	36.79	36.96	37.13	37.30	-	-	-	-
Rated Imp at BNPI [A]	14.69	14.78	14.86	14.94	15.02	15.10	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%...	535.5	541.2	546.7	552.2	557.7	563.2	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%.....	17.66	17.73	17.79	17.85	17.91	17.97	-	-	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Module type	108 cells: TWMNG-54HDxxx (xxx = 435-460, in increment of 5) 108 cells: TWMNG-54HCxxx (xxx = 435-460, in increment of 5) for cell 1, 13									
Dimensions [mm] / l x w x h.....	1800±2 x 1134±2 x 30									
Min-distance between strings [mm]	1.8					Min-creepage distance [mm]			12.2	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140			Class II	
Design load (positive) [Pa]	See remark (3)					Safety factor (positive)			1.5	
Design load (negative) [Pa]	See remark (3)					Safety factor (negative).....			1.5	
Maximum overcurrent protection rating [A]:	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	38.45	38.63	38.81	38.99	39.17	39.35	-	-	-	-
Rated Isc at STC [A] / tolerance ±3%	14.35	14.4	14.45	14.5	14.55	14.6	-	-	-	-
Rated Vmp at STC [V].....	32.85	33.03	33.21	33.39	33.57	33.75	-	-	-	-
Rated Imp at STC [A]	13.25	13.33	13.4	13.48	13.56	13.63	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%..	435	440	445	450	455	460	-	-	-	-
Bifaciality coefficient with tolerance	φIsc=80%±10%, φVoc= 98%±5%, φPmax= 80%±10%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%.....	38.45	38.63	38.81	38.99	39.17	39.35	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±3%	15.84	15.90	15.95	16.01	16.06	16.12	-	-	-	-
Rated Vmp at BNPI [V].....	32.85	33.03	33.21	33.39	33.57	33.75	-	-	-	-
Rated Imp at BNPI [A]	14.63	14.72	14.79	14.88	14.97	15.05	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%..	480.6	486.2	491.2	496.8	502.5	507.9	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%.....	17.66	17.73	17.79	17.85	17.91	17.97	-	-	-	-

Module type :	132 cells: TWMNH-66HDxxx (xxx = 580-655, in increment of 5) for cell 3, 12										
Dimensions [mm] / l x w x h..... :	2382±2 x 1134±2 x 30/33/35										
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm] :				12.5		
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II		
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5		
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5		
Maximum overcurrent protection rating [A] :	30										
Electrical ratings at irradiance level at STC											
Rated Voc at STC [V] / tolerance ±5% :	47.50	47.70	47.90	48.10	48.30	48.50	48.70	48.90	49.10	49.30	

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Rated Isc at STC [A] / tolerance ±5% :	15.58	15.64	15.70	15.76	15.82	15.88	15.94	16.00	16.06	16.12
Rated Vmp at STC [V]..... :	39.43	39.61	39.79	39.96	40.14	40.31	40.48	40.65	40.82	40.96
Rated Imp at STC [A] :	14.71	14.77	14.83	14.89	14.95	15.01	15.07	15.13	15.19	15.26
Rated Pmax at STC [W] / tolerance ±3%.. :	580	585	590	595	600	605	610	615	620	625
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	47.50	47.70	47.90	48.10	48.30	48.50	48.70	48.90	49.10	49.30
Rated Isc at BNPI [A] / tolerance ±5% :	17.20	17.27	17.33	17.40	17.46	17.53	17.60	17.66	17.73	17.80
Rated Vmp at BNPI [V]..... :	39.43	39.61	39.79	39.96	40.14	40.31	40.48	40.65	40.82	40.96
Rated Imp at BNPI [A] :	16.24	16.31	16.37	16.44	16.50	16.57	16.64	16.70	16.77	16.85
Rated Pmax at BNPI [W] / tolerance±3%.. :	640.3	646.0	651.4	656.9	662.3	667.9	673.6	678.9	684.6	690.2
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.18	19.25	19.33	19.40	19.47	19.55	19.62	19.70	19.77	19.84
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	49.50	49.60	49.75	49.85	50.00	50.15	-	-	-	-
Rated Isc at STC [A] / tolerance ±5% :	16.18	16.26	16.33	16.39	16.45	16.52	-	-	-	-
Rated Vmp at STC [V]..... :	41.10	41.24	41.38	41.51	41.65	41.78	-	-	-	-
Rated Imp at STC [A] :	15.33	15.40	15.47	15.54	15.61	15.68	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	630	635	640	645	650	655	-	-	-	-
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	49.50	49.60	49.75	49.85	50.00	50.15	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±5% :	17.86	17.95	18.03	18.09	18.16	18.24	-	-	-	-
Rated Vmp at BNPI [V]..... :	41.10	41.24	41.38	41.51	41.65	41.78	-	-	-	-
Rated Imp at BNPI [A] :	16.92	17.00	17.08	17.16	17.23	17.31	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	695.4	701.1	706.8	712.3	717.6	723.2	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.92	20.02	20.10	20.18	20.25	20.34	-	-	-	-

Module type	120 cells: TWMNH-60HDxxx (xxx = 530-595, in increment of 5) for cell 3, 12									
Dimensions [mm] / l x w x h	2172 $\pm$ 2 x 1134 $\pm$ 2 x 30/33/35									
Min-distance between strings [mm]	1.8					Min-creepage distance [mm]				
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140				
Design load (positive) [Pa]	See remark (3)					Safety factor (positive)				
						1.5				

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Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Design load (negative) [Pa] :	See remark (3)				Safety factor (negative).....:					1.5	
Maximum overcurrent protection rating [A] :	30										
Electrical ratings at irradiance level at STC											
Rated Voc at STC [V] / tolerance ±5% :	43.25	43.45	43.65	43.85	44.05	44.25	44.45	44.65	44.85	45.00	
Rated Isc at STC [A] / tolerance ±5% :	15.64	15.70	15.76	15.82	15.88	15.94	16.00	16.06	16.12	16.17	
Rated Vmp at STC [V]..... :	35.87	36.06	36.25	36.44	36.62	36.81	36.99	37.18	37.36	37.54	
Rated Imp at STC [A] :	14.78	14.84	14.90	14.96	15.02	15.08	15.14	15.20	15.26	15.32	
Rated Pmax at STC [W] / tolerance ±3%... :	530	535	540	545	550	555	560	565	570	575	
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%										
Electrical ratings at irradiance level at BNPI											
Rated Voc at BNPI [V] / tolerance ±5%..... :	43.25	43.45	43.65	43.85	44.05	44.25	44.45	44.65	44.85	45.00	
Rated Isc at BNPI [A] / tolerance ±5% :	17.27	17.33	17.40	17.46	17.53	17.60	17.66	17.73	17.80	17.85	
Rated Vmp at BNPI [V]..... :	35.87	36.06	36.25	36.44	36.62	36.81	36.99	37.18	37.36	37.54	
Rated Imp at BNPI [A] :	16.32	16.38	16.45	16.52	16.58	16.65	16.71	16.78	16.85	16.91	
Rated Pmax at BNPI [W] / tolerance±3%... :	585.4	590.7	596.3	602.0	607.2	612.9	618.1	623.9	629.5	634.8	
Electrical ratings at irradiance level at aBSI											
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.25	19.33	19.40	19.47	19.55	19.62	19.70	19.77	19.84	19.91	
Electrical ratings at irradiance level at STC											
Rated Voc at STC [V] / tolerance ±5% :	45.15	45.30	45.45	45.50	-	-	-	-	-	-	
Rated Isc at STC [A] / tolerance ±5% :	16.22	16.30	16.38	16.46	-	-	-	-	-	-	
Rated Vmp at STC [V]..... :	37.72	37.89	38.07	38.24	-	-	-	-	-	-	
Rated Imp at STC [A] :	15.38	15.44	15.50	15.56	-	-	-	-	-	-	
Rated Pmax at STC [W] / tolerance ±3%... :	580	585	590	595	-	-	-	-	-	-	
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%										
Electrical ratings at irradiance level at BNPI											
Rated Voc at BNPI [V] / tolerance ±5%..... :	45.15	45.30	45.45	45.50	-	-	-	-	-	-	
Rated Isc at BNPI [A] / tolerance ±5% :	17.91	17.99	18.08	18.17	-	-	-	-	-	-	
Rated Vmp at BNPI [V]..... :	37.72	37.89	38.07	38.24	-	-	-	-	-	-	
Rated Imp at BNPI [A] :	16.98	17.04	17.11	17.18	-	-	-	-	-	-	
Rated Pmax at BNPI [W] / tolerance±3%... :	640.5	645.6	651.4	657.0	-	-	-	-	-	-	
Electrical ratings at irradiance level at aBSI											
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.97	20.07	20.16	20.26	-	-	-	-	-	-	

Module type	108 cells: TWMNH-54HDxxx (xxx = 475-535, in increment of 5) 108 cells: TWMNH-54HCxxx (xxx = 475-535, in increment of 5)
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Chengdu, 2026-04-13 (Place and date)

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	for cell 3, 12									
Dimensions [mm] / l x w x h..... :	1961±2 x 1134±2 x 30/33/35									
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm] :				12.5	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	39.16	39.34	39.52	39.70	39.88	40.06	40.24	40.42	40.60	40.80
Rated Isc at STC [A] / tolerance ±5% :	15.74	15.77	15.80	15.83	15.86	15.89	15.92	15.95	15.98	16.05
Rated Vmp at STC [V]..... :	32.45	32.70	32.95	33.20	33.45	33.70	33.94	34.19	34.43	34.67
Rated Imp at STC [A] :	14.64	14.68	14.72	14.76	14.80	14.84	14.88	14.92	14.96	15.00
Rated Pmax at STC [W] / tolerance ±3%... :	475	480	485	490	495	500	505	510	515	520
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	39.16	39.34	39.52	39.70	39.88	40.06	40.24	40.42	40.60	40.80
Rated Isc at BNPI [A] / tolerance ±5% :	17.38	17.41	17.44	17.48	17.51	17.54	17.57	17.61	17.64	17.72
Rated Vmp at BNPI [V]..... :	32.45	32.70	32.95	33.20	33.45	33.70	33.94	34.19	34.43	34.67
Rated Imp at BNPI [A] :	16.16	16.21	16.25	16.29	16.34	16.38	16.43	16.47	16.52	16.56
Rated Pmax at BNPI [W] / tolerance±3%... :	524.4	530.1	535.4	540.8	546.6	552.0	557.6	563.1	568.8	574.1
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.38	19.41	19.45	19.49	19.52	19.56	19.60	19.63	19.67	19.76
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	40.95	41.10	41.25	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±5% :	16.12	16.20	16.28	-	-	-	-	-	-	-
Rated Vmp at STC [V]..... :	34.87	35.06	35.25	-	-	-	-	-	-	-
Rated Imp at STC [A] :	15.06	15.12	15.18	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	525	530	535	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	40.95	41.10	41.25	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±5% :	17.80	17.88	17.97	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	34.87	35.06	35.25	-	-	-	-	-	-	-
Rated Imp at BNPI [A] :	16.63	16.69	16.76	-	-	-	-	-	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	579.9	585.2	590.8	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$	19.84	19.94	20.04	-	-	-	-	-	-	-

Module type	96 cells: TWMNH-48HDxxx (xxx = 420-475, in increment of 5) 96 cells: TWMNH-48HCxxx (xxx = 420-475, in increment of 5) for cell 3, 12									
Dimensions [mm] / l x w x h.....	1762±2 x 1134±2 x 30/33/35									
Min-distance between strings [mm]	1.8				Min-creepage distance [mm].....				12.5	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140				Class II	
Design load (positive) [Pa]	See remark (3)				Safety factor (positive)				1.5	
Design load (negative) [Pa]	See remark (3)				Safety factor (negative).....				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	34.55	34.75	34.95	35.15	35.35	35.55	35.75	35.95	36.15	36.35
Rated Isc at STC [A] / tolerance ±5%	15.77	15.80	15.83	15.86	15.89	15.92	15.95	15.98	16.05	16.12
Rated Vmp at STC [V].....	28.63	28.90	29.16	29.42	29.67	29.93	30.19	30.44	30.69	30.94
Rated Imp at STC [A]	14.67	14.71	14.75	14.79	14.83	14.87	14.91	14.95	14.99	15.03
Rated Pmax at STC [W] / tolerance ±3%...	420	425	430	435	440	445	450	455	460	465
Bifaciality coefficient with tolerance	φIsc=80%±10%, φVoc= 98%±5%, φPmax= 80%±10%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%.....	34.55	34.75	34.95	35.15	35.35	35.55	35.75	35.95	36.15	36.35
Rated Isc at BNPI [A] / tolerance ±5%	17.41	17.44	17.48	17.51	17.54	17.57	17.61	17.64	17.72	17.80
Rated Vmp at BNPI [V].....	28.63	28.90	29.16	29.42	29.67	29.93	30.19	30.44	30.69	30.94
Rated Imp at BNPI [A]	16.19	16.24	16.28	16.33	16.37	16.42	16.46	16.50	16.55	16.59
Rated Pmax at BNPI [W] / tolerance±3%...	463.5	469.3	474.7	480.4	485.7	491.5	496.9	502.3	507.9	513.3
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%.....	19.41	19.45	19.49	19.52	19.56	19.60	19.63	19.67	19.76	19.84
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	36.50	36.65	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±5%	16.20	16.28	-	-	-	-	-	-	-	-
Rated Vmp at STC [V].....	31.13	31.32	-	-	-	-	-	-	-	-
Rated Imp at STC [A]	15.10	15.17	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%...	470	475	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance	φIsc=80%±10%, φVoc= 98%±5%, φPmax= 80%±10%									

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 5\%$:	36.50	36.65	-	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance $\pm 5\%$:	17.88	17.97	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	31.13	31.32	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A]	16.67	16.75	-	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	518.9	524.6	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$:	19.94	20.04	-	-	-	-	-	-	-	-

Module type :	96 cells: TWMNH-48HExxx (xxx = 425-475, in increment of 5) 96 cells: TWMNH-48HWxxx (xxx = 425-475, in increment of 5) for cell 3, 12									
Dimensions [mm] / l x w x h..... :	1762±2 x 1134±2 x 30/33/35									
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm]..... :				12.4	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	35.20	35.35	35.50	35.65	35.80	35.95	36.10	36.25	36.40	36.55
Rated Isc at STC [A] / tolerance ±5% :	15.58	15.63	15.68	15.72	15.76	15.81	15.85	15.89	15.92	15.95
Rated Vmp at STC [V]..... :	28.53	28.79	29.05	29.30	29.56	29.81	30.06	30.31	30.56	30.80
Rated Imp at STC [A] :	14.90	14.94	14.98	15.02	15.06	15.10	15.14	15.18	15.22	15.26
Rated Pmax at STC [W] / tolerance ±3%... :	425	430	435	440	445	450	455	460	465	470
Rated Voc at STC [V] / tolerance ±5% :	36.70	-	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±5% :	15.97	-	-	-	-	-	-	-	-	-
Rated Vmp at STC [V]..... :	31.05	-	-	-	-	-	-	-	-	-
Rated Imp at STC [A] :	15.30	-	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	475	-	-	-	-	-	-	-	-	-

Double Glass PV Modules with Half-cut 8" TOPCon Mono-crystalline Silicon Solar Cells:

Module type	132 cells: TWMNF-66HDxxx (xxx = 665-755, in increment of 5) for cell 2, 14									
Dimensions [mm] / l x w x h..... :	2384 $\pm$ 2 x 1303 $\pm$ 2 x 35/ 33									
Min-distance between strings [mm]	2.1				Min-creepage distance [mm]..... :				12.0	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140				Class II	

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Design load (positive) [Pa] :	See remark (3)				Safety factor (positive):					1.5
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative).....:					1.5
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	46.90	47.10	47.30	47.50	47.70	47.85	48.43	48.60	48.77	48.94
Rated Isc at STC [A] / tolerance ±5% :	18.06	18.10	18.14	18.18	18.22	18.26	18.30	18.35	18.40	18.45
Rated Vmp at STC [V]..... :	39.10	39.30	39.50	39.70	39.90	40.10	40.18	40.35	40.52	40.69
Rated Imp at STC [A] :	17.01	17.05	17.09	17.12	17.17	17.21	17.30	17.35	17.40	17.45
Rated Pmax at STC [W] / tolerance ±3%... :	665	670	675	680	685	690	695	700	705	710
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	46.90	47.10	47.30	47.50	47.70	47.85	48.43	48.60	48.77	48.94
Rated Isc at BNPI [A] / tolerance ±5% :	19.94	19.98	20.03	20.07	20.11	20.16	20.20	20.26	20.31	20.37
Rated Vmp at BNPI [V]..... :	39.10	39.30	39.50	39.70	39.90	40.10	40.18	40.35	40.52	40.69
Rated Imp at BNPI [A] :	18.78	18.82	18.87	18.90	18.95	19.00	19.10	19.15	19.21	19.26
Rated Pmax at BNPI [W] / tolerance±3%... :	734.3	739.6	745.4	750.3	756.1	761.9	767.4	772.7	778.4	783.7
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	22.23	22.28	22.33	22.38	22.43	22.48	22.53	22.59	22.65	22.71
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	49.11	49.28	49.45	49.55	49.65	49.80	49.95	50.10	50.25	-
Rated Isc at STC [A] / tolerance ±5% :	18.50	18.55	18.60	18.68	18.75	18.81	18.87	18.93	18.99	-
Rated Vmp at STC [V]..... :	40.86	41.03	41.20	41.37	41.53	41.69	41.86	42.02	42.18	-
Rated Imp at STC [A] :	17.50	17.55	17.60	17.65	17.70	17.75	17.80	17.85	17.90	-
Rated Pmax at STC [W] / tolerance ±3%... :	715	720	725	730	735	740	745	750	755	-
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	49.11	49.28	49.45	49.55	49.65	49.80	49.95	50.10	50.25	-
Rated Isc at BNPI [A] / tolerance ±5% :	20.42	20.48	20.53	20.62	20.70	20.77	20.83	20.90	20.96	-
Rated Vmp at BNPI [V]..... :	40.86	41.03	41.20	41.37	41.53	41.69	41.86	42.02	42.18	-
Rated Imp at BNPI [A] :	19.32	19.37	19.43	19.48	19.54	19.60	19.65	19.71	19.76	-
Rated Pmax at BNPI [W] / tolerance±3%... :	789.4	794.8	800.5	805.9	811.5	817.1	822.5	828.2	833.5	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	22.77	22.84	22.90	23.00	23.08	23.16	23.23	23.30	23.38	-

Module type	120 cells: TWMNF-60HDxxx (xxx = 605-685, in increment of 5) for cell 2, 14
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Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Dimensions [mm] / l x w x h..... :	2172±2 x 1303±2 x 35/ 33									
Min-distance between strings [mm] :	2.1					Min-creepage distance [mm]..... :			12.3	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140 :			Class II	
Design load (positive) [Pa] :	See remark (3)					Safety factor (positive) :			1.5	
Design load (negative) [Pa] :	See remark (3)					Safety factor (negative)..... :			1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	42.70	42.90	43.10	43.30	43.45	44.05	44.20	44.36	44.53	44.70
Rated Isc at STC [A] / tolerance ±5% :	18.05	18.10	18.15	18.21	18.26	18.28	18.31	18.36	18.41	18.47
Rated Vmp at STC [V]..... :	35.40	35.58	35.76	35.94	36.12	36.36	36.60	36.85	37.01	37.17
Rated Imp at STC [A] :	17.09	17.15	17.20	17.25	17.31	17.33	17.35	17.37	17.43	17.49
Rated Pmax at STC [W] / tolerance ±3%.. :	605	610	615	620	625	630	635	640	645	650
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	42.70	42.90	43.10	43.30	43.45	44.05	44.20	44.36	44.53	44.70
Rated Isc at BNPI [A] / tolerance ±5% :	19.93	19.98	20.04	20.10	20.16	20.18	20.21	20.27	20.32	20.39
Rated Vmp at BNPI [V]..... :	35.40	35.58	35.76	35.94	36.12	36.36	36.60	36.85	37.01	37.17
Rated Imp at BNPI [A] :	18.87	18.93	18.99	19.04	19.10	19.13	19.15	19.18	19.24	19.31
Rated Pmax at BNPI [W] / tolerance±3%.. :	668.0	673.5	679.1	684.3	689.9	695.6	700.9	706.8	712.1	717.8
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	22.22	22.28	22.34	22.42	22.48	22.50	22.54	22.60	22.66	22.74
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	44.88	45.06	45.21	45.36	45.50	45.65	45.80	-	-	-
Rated Isc at STC [A] / tolerance ±5% :	18.53	18.58	18.63	18.68	18.73	18.81	18.88	-	-	-
Rated Vmp at STC [V]..... :	37.33	37.51	37.68	37.86	38.03	38.21	38.38	-	-	-
Rated Imp at STC [A] :	17.55	17.60	17.65	17.70	17.75	17.80	17.85	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	655	660	665	670	675	680	685	-	-	-
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	44.88	45.06	45.21	45.36	45.50	45.65	45.80	-	-	-
Rated Isc at BNPI [A] / tolerance ±5% :	20.46	20.51	20.57	20.62	20.68	20.77	20.84	-	-	-
Rated Vmp at BNPI [V]..... :	37.33	37.51	37.68	37.86	38.03	38.21	38.38	-	-	-
Rated Imp at BNPI [A] :	19.37	19.43	19.48	19.54	19.60	19.65	19.71	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	723.1	728.8	734.0	739.8	745.4	750.8	756.5	-	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$:	22.81	22.87	22.93	23.00	23.06	23.16	23.24	-	-	-

Module type :	108 cells: TWMNF-54HDxxx (xxx = 545-615, in increment of 5) for cell 2, 14		
Dimensions [mm] / l x w x h..... :	1960±2 x 1303±2 x 35/ 33		
Min-distance between strings [mm] :	2.1	Min-creepage distance [mm] :	12.1
Maximum System Voltage [V]	1500	Safety class acc. to IEC 61140 :	Class II
Design load (positive) [Pa] :	See remark (3)	Safety factor (positive) :	1.5
Design load (negative) [Pa] :	See remark (3)	Safety factor (negative)..... :	1.5
Maximum overcurrent protection rating [A] :	35		

Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance $\pm 5\%$	38.57	38.74	38.91	39.08	39.25	39.75	39.90	40.05	40.20	40.35
Rated Isc at STC [A] / tolerance $\pm 5\%$	18.13	18.18	18.23	18.28	18.33	18.35	18.38	18.41	18.44	18.48
Rated Vmp at STC [V]..... :	31.72	31.90	32.08	32.26	32.44	32.69	32.94	33.19	33.43	33.63
Rated Imp at STC [A]	17.18	17.24	17.30	17.36	17.42	17.44	17.46	17.48	17.50	17.55
Rated Pmax at STC [W] / tolerance $\pm 3\%$.. :	545	550	555	560	565	570	575	580	585	590
Bifaciality coefficient with tolerance	$\phi_{Isc}=80\%\pm 5\%$, $\phi_{Voc}=98\%\pm 5\%$, $\phi_{Pmax}=80\%\pm 5\%$									

Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 5\%$:	38.57	38.74	38.91	39.08	39.25	39.75	39.90	40.05	40.20	40.35
Rated Isc at BNPI [A] / tolerance $\pm 5\%$	20.01	20.07	20.13	20.18	20.24	20.26	20.29	20.32	20.36	20.40
Rated Vmp at BNPI [V]..... :	31.72	31.90	32.08	32.26	32.44	32.69	32.94	33.19	33.43	33.63
Rated Imp at BNPI [A]	18.97	19.03	19.10	19.16	19.23	19.25	19.27	19.30	19.32	19.37
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	601.7	607.1	612.7	618.1	623.8	629.3	634.8	640.6	645.9	651.4

Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$:	22.32	22.38	22.44	22.50	22.56	22.59	22.63	22.66	22.70	22.75

Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance $\pm 5\%$	40.50	40.65	40.80	40.95	41.10	-	-	-	-	-
Rated Isc at STC [A] / tolerance $\pm 5\%$	18.56	18.64	18.72	18.80	18.88	-	-	-	-	-
Rated Vmp at STC [V]..... :	33.81	34.00	34.19	34.37	34.56	-	-	-	-	-
Rated Imp at STC [A]	17.60	17.65	17.70	17.75	17.80	-	-	-	-	-
Rated Pmax at STC [W] / tolerance $\pm 3\%$.. :	595	600	605	610	615	-	-	-	-	-
Bifaciality coefficient with tolerance	$\phi_{Isc}=80\%\pm 5\%$, $\phi_{Voc}=98\%\pm 5\%$, $\phi_{Pmax}=80\%\pm 5\%$									

Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 5\%$:	40.50	40.65	40.80	40.95	41.10	-	-	-	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Rated Isc at BNPI [A] / tolerance $\pm 5\%$	20.49	20.58	20.67	20.75	20.84	-	-	-	-	-
Rated Vmp at BNPI [V]	33.81	34.00	34.19	34.37	34.56	-	-	-	-	-
Rated Imp at BNPI [A]	19.43	19.48	19.54	19.60	19.65	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$..	656.9	662.3	668.1	673.7	679.1	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$	22.85	22.95	23.04	23.14	23.24	-	-	-	-	-

Module type :	110 cells: TWMNF-55HDxxx (xxx = 530-565, in increment of 5) for cell 2									
Dimensions [mm] / l x w x h..... :	2384±2 x 1096±2 x 35/ 33									
Min-distance between strings [mm] :	2					Min-creepage distance [mm]..... :			12.5	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140 :			Class II	
Design load (positive) [Pa] :	See remark (3)					Safety factor (positive) :			1.5	
Design load (negative) [Pa] :	See remark (3)					Safety factor (negative)..... :			1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	38.05	38.25	38.45	38.65	38.85	39.05	39.25	39.45	-	-
Rated Isc at STC [A] / tolerance ±5% :	17.96	18.00	18.04	18.08	18.12	18.16	18.20	18.24	-	-
Rated Vmp at STC [V]..... :	31.07	31.27	31.47	31.67	31.87	32.05	32.23	32.40	-	-
Rated Imp at STC [A] :	17.06	17.11	17.16	17.21	17.26	17.32	17.38	17.44	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	530	535	540	545	550	555	560	565	-	-
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	38.05	38.25	38.45	38.65	38.85	39.05	39.25	39.45	-	-
Rated Isc at BNPI [A] / tolerance ±5% :	19.83	19.87	19.92	19.96	20.00	20.05	20.09	20.14	-	-
Rated Vmp at BNPI [V]..... :	31.07	31.27	31.47	31.67	31.87	32.05	32.23	32.40	-	-
Rated Imp at BNPI [A] :	18.83	18.89	18.94	19.00	19.05	19.12	19.19	19.25	-	-
Rated Pmax at BNPI [W] / tolerance±3%... :	585.0	590.7	596.0	601.7	607.1	612.8	618.5	623.7	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	22.11	22.16	22.21	22.26	22.31	22.35	22.40	22.45	-	-

Module type	100 cells: TWMNF-50HDxxx (xxx = 480-510, in increment of 5) for cell 3									
Dimensions [mm] / l x w x h	2172 ± 2 x 1096 ± 2 x 35/ 33									
Min-distance between strings [mm]	2					Min-creepage distance [mm]				
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140				

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Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Design load (positive) [Pa] :	See remark (3)				Safety factor (positive):				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative).....:				1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	34.68	34.85	35.02	35.19	35.36	35.53	35.70	-	-	-
Rated Isc at STC [A] / tolerance ±5% :	17.89	17.94	17.99	18.04	18.09	18.14	18.19	-	-	-
Rated Vmp at STC [V]..... :	28.60	28.79	28.98	29.17	29.36	29.54	29.72	-	-	-
Rated Imp at STC [A] :	16.78	16.85	16.91	16.97	17.06	17.10	17.16	-	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	480	485	490	495	500	505	510	-	-	-
Bifaciality coefficient with tolerance :	ϕIsc=80%±5%, ϕVoc= 98%±5%, ϕPmax= 80%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	34.68	34.85	35.02	35.19	35.36	35.53	35.70	-	-	-
Rated Isc at BNPI [A] / tolerance ±5% :	19.75	19.80	19.86	19.92	19.97	20.03	20.08	-	-	-
Rated Vmp at BNPI [V]..... :	28.60	28.79	28.98	29.17	29.36	29.54	29.72	-	-	-
Rated Imp at BNPI [A] :	18.52	18.60	18.67	18.73	18.83	18.88	18.94	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%... :	529.7	535.5	541.1	546.4	552.8	557.7	562.9	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	22.02	22.08	22.15	22.21	22.27	22.33	22.39	-	-	-

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

Module type	156 cells: TWMPD-78HDxxx (xxx = 570-615, in increment of 5) for cell 6, 7									
Dimensions [mm] / l x w x h.....	2465±2 x 1134±2 x 30 / 35									
Min-distance between strings [mm]	1.8				Min-creepage distance [mm]				12.925	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140				Class II	
Design load (positive) [Pa]	See remark (3)				Safety factor (positive)				1.5	
Design load (negative) [Pa]	See remark (3)				Safety factor (negative).....				1.5	
Maximum overcurrent protection rating [A]:	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	53.05	53.25	53.45	53.65	53.85	54.05	54.25	54.45	54.65	54.85
Rated Isc at STC [A] / tolerance ±3%	13.83	13.88	13.93	13.98	14.03	14.08	14.13	14.18	14.23	14.28
Rated Vmp at STC [V].....	43.60	43.80	44.00	44.20	44.40	44.60	44.80	45.00	45.20	45.40
Rated Imp at STC [A]	13.07	13.13	13.18	13.24	13.29	13.34	13.39	13.45	13.50	13.55
Rated Pmax at STC [W] / tolerance ±3% ..	570	575	580	585	590	595	600	605	610	615
Bifaciality coefficient with tolerance	ϕIsc=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										

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Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Rated Voc at BNPI [V] / tolerance $\pm 3\%$:	53.05	53.25	53.45	53.65	53.85	54.05	54.25	54.45	54.65	54.85
Rated Isc at BNPI [A] / tolerance $\pm 3\%$:	15.08	15.14	15.19	15.24	15.30	15.35	15.41	15.46	15.52	15.57
Rated Vmp at BNPI [V]..... :	43.60	43.80	44.00	44.20	44.40	44.60	44.80	45.00	45.20	45.40
Rated Imp at BNPI [A] :	14.26	14.32	14.37	14.43	14.49	14.55	14.60	14.67	14.72	14.78
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	621.7	627.2	632.3	637.8	643.4	648.9	654.1	660.2	665.3	671.0
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 3\%$:	16.61	16.67	16.73	16.79	16.85	16.91	16.97	17.03	17.09	17.15

Module type :	144 cells: TWMPD-72HDxxx (xxx = 525-565, in increment of 5) for cell 6, 7									
Dimensions [mm] / l x w x h..... :	2278±2 x 1134±2 x 30 / 35									
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm]..... :				12.2	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	49.10	49.30	49.50	49.70	49.90	50.10	50.30	50.50	50.70	-
Rated Isc at STC [A] / tolerance ±3% :	13.63	13.68	13.73	13.78	13.83	13.88	13.93	13.98	14.03	-
Rated Vmp at STC [V]..... :	40.96	41.16	41.36	41.56	41.76	41.96	42.16	42.36	42.56	-
Rated Imp at STC [A] :	12.82	12.88	12.94	13.00	13.05	13.11	13.17	13.23	13.29	-
Rated Pmax at STC [W] / tolerance ±3%... :	525	530	535	540	545	550	555	560	565	-
Bifaciality coefficient with tolerance :	ϕIsc=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	49.10	49.30	49.50	49.70	49.90	50.10	50.30	50.50	50.70	-
Rated Isc at BNPI [A] / tolerance ±3% :	14.86	14.92	14.97	15.03	15.08	15.14	15.19	15.24	15.30	-
Rated Vmp at BNPI [V]..... :	40.96	41.16	41.36	41.56	41.76	41.96	42.16	42.36	42.56	-
Rated Imp at BNPI [A] :	13.98	14.04	14.11	14.18	14.23	14.30	14.36	14.43	14.49	-
Rated Pmax at BNPI [W] / tolerance±3%... :	572.6	577.9	583.6	589.3	594.2	600.0	605.4	611.3	616.7	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	16.37	16.43	16.49	16.55	16.61	16.67	16.73	16.79	16.85	-

Module type	132 cells: TWMPD-66HDxxx (xxx = 480-520, in increment of 5) for cell 6, 7									
Dimensions [mm] / l x w x h..... :	2093 ± 2 x 1134 ± 2 x 30 / 35									
Min-distance between strings [mm]	1.8				Min-creepage distance [mm]..... :				12.375	

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140:					Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive):					1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative).....:					1.5	
Maximum overcurrent protection rating [A] :	30										
Electrical ratings at irradiance level at STC											
Rated Voc at STC [V] / tolerance $\pm 3\%$:	45.00	45.20	45.40	45.60	45.80	46.00	46.20	46.40	46.60	-	
Rated Isc at STC [A] / tolerance $\pm 3\%$:	13.62	13.67	13.72	13.77	13.82	13.87	13.92	13.97	14.02	-	
Rated Vmp at STC [V]..... :	37.52	37.69	37.86	38.03	38.20	38.37	38.54	38.71	38.88	-	
Rated Imp at STC [A] :	12.79	12.87	12.94	13.02	13.09	13.16	13.23	13.31	13.37	-	
Rated Pmax at STC [W] / tolerance $\pm 3\%$... :	480	485	490	495	500	505	510	515	520	-	
Bifaciality coefficient with tolerance :	$\phi_{Isc}=70\%\pm 5\%$, $\phi_{Voc}= 98\%\pm 5\%$, $\phi_{Pmax}= 70\%\pm 5\%$										
Electrical ratings at irradiance level at BNPI											
Rated Voc at BNPI [V] / tolerance $\pm 3\%$:	45.00	45.20	45.40	45.60	45.80	46.00	46.20	46.40	46.60	-	
Rated Isc at BNPI [A] / tolerance $\pm 3\%$:	14.85	14.91	14.96	15.02	15.07	15.12	15.18	15.23	15.29	-	
Rated Vmp at BNPI [V]..... :	37.52	37.69	37.86	38.03	38.20	38.37	38.54	38.71	38.88	-	
Rated Imp at BNPI [A] :	13.95	14.03	14.11	14.19	14.27	14.35	14.43	14.51	14.58	-	
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$... :	523.4	528.8	534.2	539.6	545.1	550.6	556.1	561.7	566.9	-	
Electrical ratings at irradiance level at aBSI											
Rated Isc at aBSI [A] / tolerance $\pm 3\%$:	16.36	16.42	16.48	16.54	16.60	16.66	16.72	16.78	16.84	-	

Module type :	120 cells: TWMPD-60HDxxx (xxx = 4405-470, in increment of 5) for cell 6, 7									
Dimensions [mm] / l x w x h..... :	1908±2 x 1134±2 x 30 / 35									
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm]..... :				12.6	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	41.10	41.30	41.50	41.70	41.90	42.10	42.30	-	-	-
Rated Isc at STC [A] / tolerance ±3% :	13.65	13.70	13.75	13.80	13.85	13.90	13.95	-	-	-
Rated Vmp at STC [V]..... :	34.26	34.43	34.60	34.77	34.94	35.11	35.28	-	-	-
Rated Imp at STC [A] :	12.84	12.92	13.01	13.09	13.17	13.24	13.32	-	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	440	445	450	455	460	465	470	-	-	-
Bifaciality coefficient with tolerance :	φIsc=70%±5%, φVoc= 98%±5%, φPmax= 70%±5%									

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 3\%$:	41.10	41.30	41.50	41.70	41.90	42.10	42.30	-	-	-
Rated Isc at BNPI [A] / tolerance $\pm 3\%$:	14.88	14.94	14.99	15.05	15.10	15.16	15.21	-	-	-
Rated Vmp at BNPI [V]..... :	34.26	34.43	34.60	34.77	34.94	35.11	35.28	-	-	-
Rated Imp at BNPI [A] :	14.00	14.09	14.18	14.27	14.36	14.44	14.52	-	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	479.6	485.1	490.6	496.2	501.7	507.0	512.3	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 3\%$:	16.39	16.45	16.51	16.57	16.63	16.69	16.75	-	-	-

Module type :	108 cells: TWMPD-54HDxxx (xxx = 395-425, in increment of 5) for cell 6, 7									
Dimensions [mm] / l x w x h..... :	1722±2 x 1134±2 x 30 / 35									
Min-distance between strings [mm] :	1.8					Min-creepage distance [mm]..... :			12.375	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140 :			Class II	
Design load (positive) [Pa] :	See remark (3)					Safety factor (positive) :			1.5	
Design load (negative) [Pa] :	See remark (3)					Safety factor (negative)..... :			1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	36.93	37.08	37.23	37.38	37.53	37.68	37.83	-	-	-
Rated Isc at STC [A] / tolerance ±3% :	13.67	13.77	13.87	13.92	13.95	13.98	14.01	-	-	-
Rated Vmp at STC [V]..... :	30.43	30.58	30.73	30.88	31.03	31.18	31.33	-	-	-
Rated Imp at STC [A] :	12.98	13.08	13.18	13.28	13.38	13.48	13.58	-	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	395	400	405	410	415	420	425	-	-	-
Bifaciality coefficient with tolerance :	ϕIsC=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	36.93	37.08	37.23	37.38	37.53	37.68	37.83	-	-	-
Rated Isc at BNPI [A] / tolerance ±3% :	14.91	15.02	15.12	15.18	15.21	15.24	15.28	-	-	-
Rated Vmp at BNPI [V]..... :	30.43	30.58	30.73	30.88	31.03	31.18	31.33	-	-	-
Rated Imp at BNPI [A] :	14.15	14.26	14.37	14.48	14.59	14.70	14.81	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%... :	430.6	436.1	441.6	447.1	452.7	458.3	464.0	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	16.42	16.54	16.66	16.72	16.75	16.79	16.83	-	-	-

Module type	144 cells: TWMPG-72HDxxx (xxx = 560-590, in increment of 5) for cell 6, 7									
Dimensions [mm] / l x w x h..... :	2382 $\pm$ 2 x 1134 $\pm$ 2 x 30									

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Min-distance between strings [mm] :	1.8				Min-creepage distance [mm] :				12.2		
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II		
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5		
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5		
Maximum overcurrent protection rating [A] :	30										
Electrical ratings at irradiance level at STC											
Rated Voc at STC [V] / tolerance ±3% :	49.50	49.70	49.90	50.10	50.30	50.50	50.70	-	-	-	
Rated Isc at STC [A] / tolerance ±3% :	14.39	14.44	14.49	14.54	14.59	14.64	14.69	-	-	-	
Rated Vmp at STC [V]..... :	42.30	42.50	42.70	42.90	43.10	43.30	43.50	-	-	-	
Rated Imp at STC [A] :	13.24	13.30	13.35	13.41	13.46	13.52	13.57	-	-	-	
Rated Pmax at STC [W] / tolerance ±3%.. :	560	565	570	575	580	585	590	-	-	-	
Bifaciality coefficient with tolerance :	ϕIsc=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%										
Electrical ratings at irradiance level at BNPI											
Rated Voc at BNPI [V] / tolerance ±3%..... :	49.50	49.70	49.90	50.10	50.30	50.50	50.70	-	-	-	
Rated Isc at BNPI [A] / tolerance ±3% :	15.69	15.75	15.80	15.86	15.91	15.96	16.02	-	-	-	
Rated Vmp at BNPI [V]..... :	42.30	42.50	42.70	42.90	43.10	43.30	43.50	-	-	-	
Rated Imp at BNPI [A] :	14.44	14.50	14.56	14.62	14.68	14.74	14.80	-	-	-	
Rated Pmax at BNPI [W] / tolerance±3%.. :	610.8	616.3	621.7	627.2	632.7	638.2	643.8	-	-	-	
Electrical ratings at irradiance level at aBSI											
Rated Isc at aBSI [A] / tolerance ±3%..... :	17.28	17.34	17.40	17.46	17.52	17.58	17.64	-	-	-	

Module type :	108 cells: TWMPG-54HDxxx (xxx = 420-440, in increment of 5) 108 cells: TWMPG-54HCxxx (xxx = 420-440, in increment of 5) for cell 6, 7									
Dimensions [mm] / l x w x h..... :	1800±2 x 1134±2 x 30									
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm]..... :				12.2	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	37.22	37.39	37.56	37.73	37.90	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±3% :	14.30	14.35	14.40	14.45	14.50	-	-	-	-	-
Rated Vmp at STC [V]..... :	31.75	31.92	32.09	32.26	32.43	-	-	-	-	-
Rated Imp at STC [A] :	13.23	13.32	13.40	13.49	13.57	-	-	-	-	-

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Chengdu, 2026-04-13 (Place and date)

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Rated Pmax at STC [W] / tolerance $\pm 3\%$.. :	420	425	430	435	440	-	-	-	-	-
Bifaciality coefficient with tolerance :	$\phi_{lsc}=70\%\pm 10\%$, $\phi_{Voc}= 98\%\pm 5\%$, $\phi_{Pmax}= 70\%\pm 10\%$									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 3\%$:	37.22	37.39	37.56	37.73	37.90	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance $\pm 3\%$:	15.59	15.65	15.70	15.76	15.81	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	31.75	31.92	32.09	32.26	32.43	-	-	-	-	-
Rated Imp at BNPI [A] :	14.43	14.52	14.61	14.71	14.80	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	458.2	463.5	468.8	474.5	480.0	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 3\%$:	17.17	17.23	17.29	17.35	17.41	-	-	-	-	-

Module type :	132 cells: TWMPH-66HDxxx (xxx = 575-585, in increment of 5) for cell 8									
Dimensions [mm] / l x w x h..... :	2382±2 x 1134±2 x 30									
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm]..... :				12.5	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	45.90	46.10	46.30	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±3% :	15.65	15.70	15.76	-	-	-	-	-	-	-
Rated Vmp at STC [V]..... :	38.60	38.80	39.00	-	-	-	-	-	-	-
Rated Imp at STC [A] :	14.90	14.95	15.01	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	575	580	585	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance :	ϕIsc=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	45.90	46.10	46.30	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±3% :	17.06	17.12	17.18	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	38.60	38.80	39.00	-	-	-	-	-	-	-
Rated Imp at BNPI [A] :	16.25	16.30	16.37	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%... :	627.3	632.4	638.4	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	18.79	18.85	18.92	-	-	-	-	-	-	-

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Module type :	120 cells: TWMPH-60HDxxx (xxx = 525-530, in increment of 5) for cell 8									
Dimensions [mm] / l x w x h :	2172±2 x 1134±2 x 30									
Min-distance between strings [mm] :	1.8				Min-creepage distance [mm]..... :				12.5	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	41.80	42.00	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±3% :	15.68	15.74	-	-	-	-	-	-	-	-
Rated Vmp at STC [V]..... :	35.20	35.40	-	-	-	-	-	-	-	-
Rated Imp at STC [A] :	14.92	14.98	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	525	530	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance :	φIsc=70%±5%, φVoc= 98%±5%, φPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	41.80	42.00	-	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±3% :	17.10	17.16	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	35.20	35.40	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A] :	16.27	16.33	-	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%... :	572.7	578.1	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	18.83	18.90	-	-	-	-	-	-	-	-

Module type :	96 cells: TWMPH-48HDxxx (xxx = 420-425, in increment of 5) 96 cells: TWMPH-48HCxxx (xxx = 420-425, in increment of 5) for cell 8									
Dimensions [mm] / l x w x h :	1762±2 x 1134±2 x 30									
Min-distance between strings [mm] :	1.8			Min-creepage distance [mm]..... :				12.5		
Maximum System Voltage [V]	1500			Safety class acc. to IEC 61140 :				Class II		
Design load (positive) [Pa] :	See remark (3)			Safety factor (positive) :				1.5		
Design load (negative) [Pa] :	See remark (3)			Safety factor (negative)..... :				1.5		
Maximum overcurrent protection rating [A] :	30									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	33.46	33.63	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±3% :	15.80	15.85	-	-	-	-	-	-	-	-

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Chengdu, 2026-04-13 (Place and date)

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Shanghai, 2026-04-13 (Place and date)

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Rated Vmp at STC [V]..... :	28.06	28.23	-	-	-	-	-	-	-	-
Rated Imp at STC [A] :	14.97	15.06	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	420	425	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance :	ϕIsc=70%±10%, ϕVoc= 98%±5%, ϕPmax= 70%±10%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	33.46	33.63	-	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±3% :	17.23	17.28	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	28.06	28.23	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A] :	16.32	16.42	-	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	457.9	463.5	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	18.98	19.04	-	-	-	-	-	-	-	-

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

Module type :	132 cells: TWMPF-66HDxxx (xxx = 635-685, in increment of 5) for cell 4, 5									
Dimensions [mm] / l x w x h..... :	2384±2 x 1303±2 x 35/ 33									
Min-distance between strings [mm] :	2.1					Min-creepage distance [mm] :			12.0	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140 :			Class II	
Design load (positive) [Pa] :	See remark (3)					Safety factor (positive) :			1.5	
Design load (negative) [Pa] :	See remark (3)					Safety factor (negative)..... :			1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	44.80	45.00	45.20	45.40	45.60	45.80	46.00	46.20	46.40	46.60
Rated Isc at STC [A] / tolerance ±3% :	18.07	18.12	18.17	18.21	18.26	18.31	18.36	18.41	18.46	18.51
Rated Vmp at STC [V]..... :	37.00	37.20	37.40	37.60	37.80	38.00	38.20	38.40	38.60	38.80
Rated Imp at STC [A] :	17.16	17.20	17.25	17.29	17.33	17.37	17.41	17.45	17.49	17.53
Rated Pmax at STC [W] / tolerance ±3%.. :	635	640	645	650	655	660	665	670	675	680
Bifaciality coefficient with tolerance :	ϕIsc=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	44.80	45.00	45.20	45.40	45.60	45.80	46.00	46.20	46.40	46.60
Rated Isc at BNPI [A] / tolerance ±3% :	19.70	19.76	19.81	19.86	19.91	19.97	20.02	20.08	20.13	20.18
Rated Vmp at BNPI [V]..... :	37.00	37.20	37.40	37.60	37.80	38.00	38.20	38.40	38.60	38.80
Rated Imp at BNPI [A] :	18.71	18.76	18.81	18.85	18.90	18.94	18.98	19.03	19.07	19.12
Rated Pmax at BNPI [W] / tolerance±3%.. :	692.3	697.9	703.5	708.8	714.4	719.7	725.0	730.8	736.1	741.9
Electrical ratings at irradiance level at aBSI										

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Chengdu, 2026-04-13 (Place and date)

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Shanghai, 2026-04-13 (Place and date)

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Rated Isc at aBSI [A] / tolerance ±3%..... :	21.70	21.76	21.82	21.87	21.93	21.99	22.05	22.11	22.17	22.23
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	46.80	-	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±3%	18.56	-	-	-	-	-	-	-	-	-
Rated Vmp at STC [V].....	39.00	-	-	-	-	-	-	-	-	-
Rated Imp at STC [A]	17.57	-	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	685	-	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance	ϕIsc=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	46.80	-	-	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±3%	20.24	-	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V].....	39.00	-	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A]	19.16	-	-	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	747.2	-	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	22.29	-	-	-	-	-	-	-	-	-

Module type	120 cells: TWMPF-60HDxxx (xxx = 580-620, in increment of 5) for cell 4, 5									
Dimensions [mm] / l x w x h.....	2172±2 x 1303±2 x 35/ 33									
Min-distance between strings [mm]	2.1					Min-creepage distance [mm]				12.3
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140				Class II
Design load (positive) [Pa]	See remark (3)					Safety factor (positive)				1.5
Design load (negative) [Pa]	See remark (3)					Safety factor (negative).....				1.5
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3%	40.84	41.04	41.24	41.44	41.64	41.84	42.04	42.24	42.44	-
Rated Isc at STC [A] / tolerance ±3%	18.25	18.30	18.36	18.41	18.46	18.52	18.57	18.62	18.67	-
Rated Vmp at STC [V].....	33.75	33.95	34.15	34.35	34.55	34.75	34.95	35.15	35.35	-
Rated Imp at STC [A]	17.19	17.23	17.28	17.32	17.37	17.41	17.46	17.50	17.54	-
Rated Pmax at STC [W] / tolerance ±3%.. :	580	585	590	595	600	605	610	615	620	-
Bifaciality coefficient with tolerance	ϕIsc=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	40.84	41.04	41.24	41.44	41.64	41.84	42.04	42.24	42.44	-
Rated Isc at BNPI [A] / tolerance ±3%	19.90	19.96	20.02	20.08	20.13	20.19	20.25	20.30	20.36	-
Rated Vmp at BNPI [V].....	33.75	33.95	34.15	34.35	34.55	34.75	34.95	35.15	35.35	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Rated Imp at BNPI [A]	18.74	18.79	18.84	18.89	18.94	18.99	19.03	19.08	19.13	-
Rated Pmax at BNPI [W] / tolerance±3%...	632.4	637.8	643.3	648.8	654.3	659.8	665.0	670.7	676.2	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%.....	21.92	21.98	22.05	22.11	22.17	22.24	22.30	22.36	22.42	-

Module type :	108 cells: TWMPF-54HDxxx (xxx = 520-560, in increment of 5) for cell 4, 5									
Dimensions [mm] / l x w x h..... :	1960±2 x 1303±2 x 35/ 33									
Min-distance between strings [mm] :	2.1					Min-creepage distance [mm]..... :				12.1
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140 :				Class II
Design load (positive) [Pa] :	See remark (3)					Safety factor (positive) :				1.5
Design load (negative) [Pa] :	See remark (3)					Safety factor (negative)..... :				1.5
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	36.57	36.73	36.89	37.05	37.21	37.37	37.53	37.69	37.83	-
Rated Isc at STC [A] / tolerance ±3% :	18.23	18.29	18.33	18.37	18.41	18.45	18.49	18.53	18.57	-
Rated Vmp at STC [V]..... :	30.32	30.49	30.66	30.83	31.00	31.17	31.34	31.51	31.68	-
Rated Imp at STC [A] :	17.15	17.22	17.29	17.36	17.42	17.49	17.55	17.62	17.68	-
Rated Pmax at STC [W] / tolerance ±3%... :	520	525	530	535	540	545	550	555	560	-
Bifaciality coefficient with tolerance :	ϕIsc=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	36.57	36.73	36.89	37.05	37.21	37.37	37.53	37.69	37.83	-
Rated Isc at BNPI [A] / tolerance ±3% :	19.88	19.94	19.99	20.03	20.08	20.12	20.16	20.21	20.25	-
Rated Vmp at BNPI [V]..... :	30.32	30.49	30.66	30.83	31.00	31.17	31.34	31.51	31.68	-
Rated Imp at BNPI [A] :	18.70	18.78	18.85	18.93	19.00	19.07	19.14	19.21	19.28	-
Rated Pmax at BNPI [W] / tolerance±3%... :	567.0	572.6	577.9	583.6	589.0	594.4	599.8	605.3	610.8	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	21.89	21.97	22.01	22.06	22.11	22.16	22.21	22.25	22.30	-

Module type	110 cells: TWMPF-55HDxxx (xxx = 530-565, in increment of 5) for cell 4, 5									
Dimensions [mm] / l x w x h.....	2384±2 x 1096±2 x 35/ 33									
Min-distance between strings [mm]	2					Min-creepage distance [mm]				12.5
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140				Class II
Design load (positive) [Pa]	See remark (3)					Safety factor (positive)				1.5
Design load (negative) [Pa]	See remark (3)					Safety factor (negative).....				1.5

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Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance $\pm 3\%$	37.30	37.50	37.70	37.90	38.10	38.30	38.50	38.70	-	-
Rated Isc at STC [A] / tolerance $\pm 3\%$	18.19	18.24	18.30	18.35	18.39	18.43	18.47	18.51	-	-
Rated Vmp at STC [V].....	31.00	31.20	31.40	31.60	31.80	32.00	32.20	32.40	-	-
Rated Imp at STC [A]	17.11	17.16	17.21	17.24	17.29	17.34	17.39	17.44	-	-
Rated Pmax at STC [W] / tolerance $\pm 3\%$..	530	535	540	545	550	555	560	565	-	-
Bifaciality coefficient with tolerance	$\phi_{Isc}=70\%\pm 5\%$, $\phi_{Voc}=98\%\pm 5\%$, $\phi_{Pmax}=70\%\pm 5\%$									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 3\%$	37.30	37.50	37.70	37.90	38.10	38.30	38.50	38.70	-	-
Rated Isc at BNPI [A] / tolerance $\pm 3\%$	19.84	19.89	19.96	20.01	20.05	20.10	20.14	20.18	-	-
Rated Vmp at BNPI [V].....	31.00	31.20	31.40	31.60	31.80	32.00	32.20	32.40	-	-
Rated Imp at BNPI [A]	18.66	18.71	18.77	18.80	18.85	18.91	18.96	19.02	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$..	578.5	583.8	589.4	594.1	599.4	605.1	610.5	616.2	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 3\%$	21.85	21.91	21.98	22.04	22.09	22.13	22.18	22.23	-	-

Module type :	100 cells: TWMPF-50HDxxx (xxx = 480-510, in increment of 5) for cell 4, 5									
Dimensions [mm] / l x w x h..... :	2172±2 x 1096±2 x 35/ 33									
Min-distance between strings [mm] :	2				Min-creepage distance [mm]..... :				12.3	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A]:	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±3% :	33.85	34.00	34.15	34.30	34.45	34.60	34.75	-	-	-
Rated Isc at STC [A] / tolerance ±3% :	18.15	18.20	18.25	18.30	18.35	18.40	18.45	-	-	-
Rated Vmp at STC [V]..... :	28.25	28.40	28.55	28.70	28.85	29.00	29.15	-	-	-
Rated Imp at STC [A] :	16.99	17.08	17.17	17.25	17.33	17.42	17.50	-	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	480	485	490	495	500	505	510	-	-	-
Bifaciality coefficient with tolerance :	φIsc=70%±5%, φVoc= 98%±5%, φPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±3%..... :	33.85	34.00	34.15	34.30	34.45	34.60	34.75	-	-	-
Rated Isc at BNPI [A] / tolerance ±3% :	19.79	19.85	19.90	19.96	20.01	20.06	20.12	-	-	-

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Rated Vmp at BNPI [V]..... :	28.25	28.40	28.55	28.70	28.85	29.00	29.15	-	-	-
Rated Imp at BNPI [A] :	18.53	18.62	18.72	18.81	18.90	19.00	19.08	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	523.5	528.8	534.5	539.8	545.3	551.0	556.2	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±3%..... :	21.80	21.86	21.92	21.98	22.04	22.10	22.16	-	-	-

Double Glass PV Modules with Half-cut 8" HJT Mono-crystalline Silicon Solar Cells:

Module type :	132 cells: TWMHF-66HDxxx (xxx = 660-740, in increment of 5) for cell 9, 10, 11									
Dimensions [mm] / l x w x h..... :	2384±2 x 1303±2 x 35/ 33									
Min-distance between strings [mm] :	1.8					Min-creepage distance [mm] :			10.4	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140 :			Class II	
Design load (positive) [Pa] :	See remark (3)					Safety factor (positive) :			1.5	
Design load (negative) [Pa] :	See remark (3)					Safety factor (negative)..... :			1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	49.34	49.42	49.50	49.58	49.66	49.74	49.82	49.90	49.98	50.06
Rated Isc at STC [A] / tolerance ±5% :	16.88	16.98	17.08	17.18	17.28	17.38	17.48	17.58	17.68	17.78
Rated Vmp at STC [V]..... :	40.72	40.83	40.93	41.04	41.14	41.24	41.35	41.45	41.55	41.65
Rated Imp at STC [A] :	16.21	16.29	16.37	16.45	16.53	16.61	16.69	16.77	16.85	16.93
Rated Pmax at STC [W] / tolerance ±3%... :	660	665	670	675	680	685	690	695	700	705
Bifaciality coefficient with tolerance :	ϕIsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	49.34	49.42	49.50	49.58	49.66	49.74	49.82	49.90	49.98	50.06
Rated Isc at BNPI [A] / tolerance ±5% :	18.82	18.93	19.04	19.15	19.26	19.37	19.49	19.60	19.71	19.82
Rated Vmp at BNPI [V]..... :	40.72	40.83	40.93	41.04	41.14	41.24	41.35	41.45	41.55	41.65
Rated Imp at BNPI [A] :	18.07	18.16	18.25	18.34	18.43	18.52	18.61	18.69	18.78	18.87
Rated Pmax at BNPI [W] / tolerance±3%... :	735.8	741.5	747.0	752.7	758.2	763.8	769.5	774.7	780.3	785.9
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance±5%..... :	21.18	21.31	21.44	21.56	21.69	21.81	21.94	22.06	22.19	22.31
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	50.14	50.22	50.30	50.38	50.46	50.54	50.62	-	-	-
Rated Isc at STC [A] / tolerance ±5% :	17.88	17.98	18.08	18.18	18.28	18.37	18.47	-	-	-
Rated Vmp at STC [V]..... :	41.75	41.84	41.94	42.03	42.13	42.22	42.32	-	-	-
Rated Imp at STC [A] :	17.01	17.09	17.17	17.25	17.33	17.41	17.49	-	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	710	715	720	725	730	735	740	-	-	-

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Bifaciality coefficient with tolerance :	$\phi_{lsc}=85\%\pm 5\%$, $\phi_{Voc}= 98\%\pm 5\%$, $\phi_{Pmax}= 85\%\pm 5\%$									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 5\%$	50.14	50.22	50.30	50.38	50.46	50.54	50.62	-	-	-
Rated Isc at BNPI [A] / tolerance $\pm 5\%$	19.93	20.04	20.15	20.27	20.38	20.48	20.59	-	-	-
Rated Vmp at BNPI [V]..... :	41.75	41.84	41.94	42.03	42.13	42.22	42.32	-	-	-
Rated Imp at BNPI [A]	18.96	19.05	19.14	19.23	19.32	19.41	19.50	-	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	791.6	797.1	802.7	808.2	814.0	819.5	825.2	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$:	22.44	22.56	22.69	22.82	22.94	23.05	23.18	-	-	-

Module type	120 cells: TWMHF-60HDxxx (xxx = 600-670, in increment of 5) for cell 9, 10, 11									
Dimensions [mm] / l x w x h.....	2172±2 x 1303±2 x 35/ 33									
Min-distance between strings [mm]	1.8				Min-creepage distance [mm]				10.4	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140				Class II	
Design load (positive) [Pa]	See remark (3)				Safety factor (positive)				1.5	
Design load (negative) [Pa]	See remark (3)				Safety factor (negative).....				1.5	
Maximum overcurrent protection rating [A]:	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	44.65	44.75	44.85	44.95	45.05	45.15	45.25	45.35	45.45	45.55
Rated Isc at STC [A] / tolerance ±5%	17.00	17.10	17.20	17.30	17.40	17.50	17.60	17.70	17.80	17.90
Rated Vmp at STC [V].....	37.16	37.26	37.36	37.46	37.56	37.66	37.75	37.85	37.94	38.04
Rated Imp at STC [A]	16.15	16.24	16.33	16.42	16.51	16.60	16.69	16.78	16.87	16.96
Rated Pmax at STC [W] / tolerance ±3%..	600	605	610	615	620	625	630	635	640	645
Bifaciality coefficient with tolerance	ϕIsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%.....	44.65	44.75	44.85	44.95	45.05	45.15	45.25	45.35	45.45	45.55
Rated Isc at BNPI [A] / tolerance ±5%	18.95	19.06	19.17	19.29	19.40	19.51	19.62	19.73	19.84	19.95
Rated Vmp at BNPI [V].....	37.16	37.26	37.36	37.46	37.56	37.66	37.75	37.85	37.94	38.04
Rated Imp at BNPI [A]	18.00	18.10	18.20	18.30	18.40	18.50	18.61	18.71	18.81	18.91
Rated Pmax at BNPI [W] / tolerance±3%..	668.9	674.4	680.0	685.5	691.1	696.7	702.5	708.2	713.7	719.3
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%.....	21.34	21.46	21.59	21.71	21.84	21.96	22.09	22.21	22.34	22.46
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	45.65	45.75	45.85	45.95	46.05	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±5%	18.00	18.10	18.20	18.30	18.40	-	-	-	-	-

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Shanghai, 2026-04-13 (Place and date)

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Rated Vmp at STC [V]..... :	38.13	38.22	38.31	38.40	38.49	-	-	-	-	-
Rated Imp at STC [A] :	17.05	17.14	17.23	17.32	17.41	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	650	655	660	665	670	-	-	-	-	-
Bifaciality coefficient with tolerance :	ϕlsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	45.65	45.75	45.85	45.95	46.05	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±5% :	20.07	20.18	20.29	20.40	20.51	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	38.13	38.22	38.31	38.40	38.49	-	-	-	-	-
Rated Imp at BNPI [A] :	19.01	19.11	19.21	19.31	19.41	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	724.9	730.4	735.9	741.5	747.1	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	22.59	22.72	22.84	22.97	23.09	-	-	-	-	-

Double Glass PV Modules with Half-cut 7" TBC Mono-crystalline Silicon Solar Cells:

Module type :	132 cells: TWMBH-66HDxxx (xxx = 635-670, in increment of 5) for cell 15, 16									
Dimensions [mm] / l x w x h..... :	2382 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm] :	1.5					Min-creepage distance [mm] :			12.25	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140 :			Class II	
Design load (positive) [Pa] :	See remark (3)					Safety factor (positive) :			1.5	
Design load (negative) [Pa] :	See remark (3)					Safety factor (negative)..... :			1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	49.40	49.50	49.60	49.70	49.80	49.90	50.00	50.10	-	-
Rated Isc at STC [A] / tolerance ±5% :	16.34	16.42	16.50	16.58	16.66	16.74	16.82	16.90	-	-
Rated Vmp at STC [V]..... :	41.44	41.54	41.64	41.75	41.84	41.94	42.04	42.14	-	-
Rated Imp at STC [A] :	15.33	15.41	15.49	15.57	15.66	15.74	15.82	15.90	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	635	640	645	650	655	660	665	670	-	-
Bifaciality coefficient with tolerance :	ϕIsc=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	49.40	49.50	49.60	49.70	49.80	49.90	50.00	50.10	-	-
Rated Isc at BNPI [A] / tolerance ±5% :	17.88	17.97	18.06	18.15	18.23	18.32	18.41	18.50	-	-
Rated Vmp at BNPI [V]..... :	41.44	41.54	41.64	41.75	41.84	41.94	42.04	42.14	-	-
Rated Imp at BNPI [A] :	16.78	16.87	16.95	17.04	17.14	17.23	17.31	17.40	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	695.3	700.6	706.0	711.5	717.1	722.5	727.9	733.3	-	-
Electrical ratings at irradiance level at aBSI										

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Rated Isc at aBSI [A] / tolerance $\pm 5\%$:	19.77	19.87	19.97	20.06	20.16	20.26	20.35	20.45	-	-
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Module type :	120 cells: TWMBH-60HDxxx (xxx = 580-610, in increment of 5) for cell 15, 16									
Dimensions [mm] / l x w x h..... :	2172 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm] :	1.5					Min-creepage distance [mm]..... :			12.5	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140 :			Class II	
Design load (positive) [Pa] :	See remark (3)					Safety factor (positive) :			1.5	
Design load (negative) [Pa] :	See remark (3)					Safety factor (negative)..... :			1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	44.64	44.74	44.84	44.94	45.04	45.14	45.24	-	-	-
Rated Isc at STC [A] / tolerance ±5% :	16.49	16.57	16.65	16.73	16.81	16.87	16.93	-	-	-
Rated Vmp at STC [V]..... :	37.26	37.43	37.61	37.79	37.96	38.13	38.31	-	-	-
Rated Imp at STC [A] :	15.57	15.63	15.69	15.75	15.81	15.87	15.93	-	-	-
Rated Pmax at STC [W] / tolerance ±3%... :	580	585	590	595	600	605	610	-	-	-
Bifaciality coefficient with tolerance :	ϕIsC=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	44.64	44.74	44.84	44.94	45.04	45.14	45.24	-	-	-
Rated Isc at BNPI [A] / tolerance ±5%..... :	18.05	18.14	18.22	18.31	18.40	18.46	18.53	-	-	-
Rated Vmp at BNPI [V]..... :	37.26	37.43	37.61	37.79	37.96	38.13	38.31	-	-	-
Rated Imp at BNPI [A] :	17.04	17.11	17.17	17.24	17.30	17.37	17.44	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%... :	635.0	640.3	645.9	651.4	656.9	662.3	667.9	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.95	20.05	20.15	20.24	20.34	20.41	20.49	-	-	-

Module type :	108 cells: TWMBH-54HDxxx (xxx = 520-545, in increment of 5) for cell 15, 16									
Dimensions [mm] / l x w x h..... :	1961 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm] :	1.5				Min-creepage distance [mm] :				13.5	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A]:	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	40.24	40.29	40.34	40.39	40.50	40.60	-	-	-	-
Rated Isc at STC [A] / tolerance ±5% :	16.58	16.63	16.68	16.72	16.80	16.88	-	-	-	-

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Chengdu, 2026-04-13 (Place and date)

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Shanghai, 2026-04-13 (Place and date)

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Rated Vmp at STC [V]..... :	33.38	33.57	33.76	33.95	34.14	34.32	-	-	-	-
Rated Imp at STC [A] :	15.58	15.64	15.70	15.76	15.82	15.88	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	520	525	530	535	540	545	-	-	-	-
Bifaciality coefficient with tolerance :	ϕlsc=70%±5%, ϕVoc= 98%±5%, ϕPmax=70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	40.24	40.29	40.34	40.39	40.50	40.60	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±5% :	18.15	18.20	18.26	18.30	18.39	18.48	-	-	-	-
Rated Vmp at BNPI [V]..... :	33.38	33.57	33.76	33.95	34.14	34.32	-	-	-	-
Rated Imp at BNPI [A] :	17.05	17.12	17.18	17.25	17.31	17.38	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	569.2	574.7	580.1	585.6	591.1	596.5	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	20.06	20.12	20.18	20.23	20.33	20.42	-	-	-	-

Module type	96 cells: TWMBH-48HDxxx (xxx = 460-485, in increment of 5) for cell 15, 16									
Dimensions [mm] / l x w x h..... :	1762 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm]	1.5					Min-creepage distance [mm]..... :			12.5	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140			Class II	
Design load (positive) [Pa]	See remark (3)					Safety factor (positive)			1.5	
Design load (negative) [Pa]	See remark (3)					Safety factor (negative)..... :			1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	35.60	35.70	35.80	35.90	36.00	36.10	-	-	-	-
Rated Isc at STC [A] / tolerance ±5%	16.50	16.55	16.60	16.75	16.80	16.89	-	-	-	-
Rated Vmp at STC [V]..... :	29.61	29.79	29.98	30.16	30.35	30.53	-	-	-	-
Rated Imp at STC [A]	15.54	15.61	15.68	15.75	15.82	15.89	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	460	465	470	475	480	485	-	-	-	-
Bifaciality coefficient with tolerance	ϕlsc=70%±5%, ϕVoc= 98%±5%, ϕPmax= 70%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	35.60	35.70	35.80	35.90	36.00	36.10	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±5%	18.06	18.11	18.17	18.33	18.39	18.49	-	-	-	-
Rated Vmp at BNPI [V]..... :	29.61	29.79	29.98	30.16	30.35	30.53	-	-	-	-
Rated Imp at BNPI [A]	17.01	17.09	17.16	17.24	17.31	17.39	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	503.6	509.0	514.5	519.9	525.5	531.0	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.97	20.03	20.09	20.27	20.33	20.44	-	-	-	-

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Double Glass PV Modules with 1/3 cut 7" TOPCon Mono-crystalline Silicon Solar Cells:

Module type	198 cells: TWMNH-66TDxxx (xxx = 615-670, in increment of 5) for cell 17, 20									
Dimensions [mm] / l x w x h.....	2382 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm]	1.5				Min-creepage distance [mm]				11.4	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140				Class II	
Design load (positive) [Pa]	See remark (3)				Safety factor (positive)				1.5	
Design load (negative) [Pa]	See remark (3)				Safety factor (negative).....				1.5	
Maximum overcurrent protection rating [A]:	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	49.33	49.45	49.57	49.69	49.81	49.93	50.06	50.19	50.36	50.52
Rated Isc at STC [A] / tolerance ±5%	15.89	15.95	16.01	16.07	16.13	16.20	16.28	16.36	16.43	16.50
Rated Vmp at STC [V].....	40.65	40.82	40.99	41.16	41.32	41.48	41.65	41.81	41.95	42.10
Rated Imp at STC [A]	15.13	15.19	15.25	15.31	15.37	15.43	15.49	15.55	15.62	15.68
Rated Pmax at STC [W] / tolerance ±3%..	615	620	625	630	635	640	645	650	655	660
Bifaciality coefficient with tolerance	φIsc=85%±5%, φVoc= 98%±5%, φPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%.....	49.33	49.45	49.57	49.69	49.81	49.93	50.06	50.19	50.36	50.52
Rated Isc at BNPI [A] / tolerance ±5%	17.61	17.68	17.74	17.81	17.88	17.95	18.04	18.13	18.21	18.29
Rated Vmp at BNPI [V].....	40.65	40.82	40.99	41.16	41.32	41.48	41.65	41.81	41.95	42.10
Rated Imp at BNPI [A]	16.78	16.83	16.91	16.99	17.04	17.12	17.17	17.25	17.31	17.39
Rated Pmax at BNPI [W] / tolerance±3%..	682	687	693	699	704	710	715	721	726	732
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%.....	19.51	19.58	19.65	19.73	19.81	19.88	19.98	20.08	20.17	20.26
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	50.67	50.84	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±5%	16.57	16.64	-	-	-	-	-	-	-	-
Rated Vmp at STC [V].....	42.25	42.42	-	-	-	-	-	-	-	-
Rated Imp at STC [A]	15.74	15.80	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%..	665	670	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance	φIsc=85%±5%, φVoc= 98%±5%, φPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%.....	50.67	50.84	-	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±5%	18.36	18.44	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V].....	42.25	42.42	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A]	17.45	17.52	-	-	-	-	-	-	-	-

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Rated Pmax at BNPI [W] / tolerance±3%.. :	737	743	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	20.34	20.43	-	-	-	-	-	-	-	-
Module type	180 cells: TWMNH-60TDxxx (xxx = 560-610, in increment of 5) for cell 17, 20									
Dimensions [mm] / l x w x h..... :	2172 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm]	1.5					Min-creepage distance [mm]			11.4	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140			Class II	
Design load (positive) [Pa]	See remark (3)					Safety factor (positive)			1.5	
Design load (negative) [Pa]	See remark (3)					Safety factor (negative).....			1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	44.55	44.70	44.85	45.00	45.15	45.30	45.45	45.60	45.75	45.90
Rated Isc at STC [A] / tolerance ±5%	16.09	16.14	16.19	16.24	16.29	16.34	16.39	16.44	16.49	16.54
Rated Vmp at STC [V].....	36.77	36.98	37.19	37.39	37.59	37.80	38.00	38.19	38.39	38.59
Rated Imp at STC [A]	15.23	15.28	15.33	15.38	15.43	15.48	15.53	15.58	15.63	15.68
Rated Pmax at STC [W] / tolerance ±3%.. :	560	565	570	575	580	585	590	595	600	605
Bifaciality coefficient with tolerance	ϕIsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	44.55	44.70	44.85	45.00	45.15	45.30	45.45	45.60	45.75	45.90
Rated Isc at BNPI [A] / tolerance ±5%	17.83	17.89	17.94	18.00	18.05	18.11	18.17	18.22	18.28	18.33
Rated Vmp at BNPI [V].....	36.77	36.98	37.19	37.39	37.59	37.80	38.00	38.19	38.39	38.59
Rated Imp at BNPI [A]	16.89	16.96	17.00	17.07	17.11	17.17	17.22	17.29	17.33	17.39
Rated Pmax at BNPI [W] / tolerance±3%.. :	621	627	632	638	643	649	654	660	665	671
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.75	19.82	19.87	19.94	19.99	20.06	20.13	20.18	20.25	20.30
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	46.05	-	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±5%	16.59	-	-	-	-	-	-	-	-	-
Rated Vmp at STC [V].....	38.78	-	-	-	-	-	-	-	-	-
Rated Imp at STC [A]	15.73	-	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	610	-	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance	ϕIsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	46.05	-	-	-	-	-	-	-	-	-

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Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Rated Isc at BNPI [A] / tolerance $\pm 5\%$	18.39	-	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V].....	38.78	-	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A]	17.44	-	-	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$..	676	-	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$	20.37	-	-	-	-	-	-	-	-	-

Module type :	162 cells: TWMNH-54TDxxx (xxx = 505-545, in increment of 5) for cell 17, 20									
Dimensions [mm] / l x w x h..... :	1961 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm] :	1.5				Min-creepage distance [mm]..... :				11.4	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	40.15	40.30	40.45	40.60	40.75	40.90	41.05	41.20	41.35	-
Rated Isc at STC [A] / tolerance ±5% :	16.00	16.05	16.10	16.15	16.20	16.25	16.30	16.35	16.40	-
Rated Vmp at STC [V]..... :	33.01	33.23	33.45	33.66	33.88	34.09	34.30	34.51	34.72	-
Rated Imp at STC [A] :	15.30	15.35	15.40	15.45	15.50	15.55	15.60	15.65	15.70	-
Rated Pmax at STC [W] / tolerance ±3%... :	505	510	515	520	525	530	535	540	545	-
Bifaciality coefficient with tolerance :	ϕIsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	40.15	40.30	40.45	40.60	40.75	40.90	41.05	41.20	41.35	-
Rated Isc at BNPI [A] / tolerance ±5% :	17.73	17.79	17.84	17.90	17.95	18.01	18.07	18.12	18.18	-
Rated Vmp at BNPI [V]..... :	33.01	33.23	33.45	33.66	33.88	34.09	34.30	34.51	34.72	-
Rated Imp at BNPI [A] :	16.97	17.04	17.08	17.15	17.18	17.25	17.29	17.36	17.40	-
Rated Pmax at BNPI [W] / tolerance±3%... :	560	566	571	577	582	588	593	599	604	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.64	19.71	19.76	19.83	19.88	19.95	20.02	20.07	20.14	-

Module type	144 cells: TWMNH-48TDxxx (xxx = 450-485, in increment of 5) for cell 17, 20									
Dimensions [mm] / l x w x h.....	1762 ± 2 x 1134 ± 2 x 30/33/35									
Min-distance between strings [mm]	1.5					Min-creepage distance [mm]				
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140				
Design load (positive) [Pa]	See remark (3)					Safety factor (positive)				

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Design load (negative) [Pa] :	See remark (3)				Safety factor (negative).....:				1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance $\pm 5\%$:	36.51	36.55	36.59	36.63	36.67	36.71	36.75	36.79	-	-
Rated Isc at STC [A] / tolerance $\pm 5\%$:	15.79	15.81	15.83	15.85	15.87	15.89	15.91	15.93	-	-
Rated Vmp at STC [V]..... :	29.43	29.69	29.95	30.22	30.48	30.75	31.01	31.28	-	-
Rated Imp at STC [A] :	15.30	15.33	15.36	15.39	15.42	15.45	15.48	15.51	-	-
Rated Pmax at STC [W] / tolerance $\pm 3\%$.. :	450	455	460	465	470	475	480	485	-	-
Bifaciality coefficient with tolerance :	$\phi_{Isc}=85\%\pm 5\%$, $\phi_{Voc}=98\%\pm 5\%$, $\phi_{Pmax}=85\%\pm 5\%$									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 5\%$:	36.51	36.55	36.59	36.63	36.67	36.71	36.75	36.79	-	-
Rated Isc at BNPI [A] / tolerance $\pm 5\%$:	17.50	17.52	17.54	17.57	17.59	17.61	17.63	17.66	-	-
Rated Vmp at BNPI [V]..... :	29.43	29.69	29.95	30.22	30.48	30.75	31.01	31.28	-	-
Rated Imp at BNPI [A] :	16.96	17.01	17.03	17.08	17.10	17.14	17.16	17.20	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	499	505	510	516	521	527	532	538	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$:	19.57	19.60	19.62	19.65	19.67	19.70	19.72	19.75	-	-

Double Glass PV Modules with 1/4 cut 7" TOPCon Mono-crystalline Silicon Solar Cells:

Module type :	264 cells: TWMNH-66QDxxx (xxx = 615-670, in increment of 5) for cell 18, 21									
Dimensions [mm] / l x w x h..... :	2382 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm] :	1.5				Min-creepage distance [mm] :				11.4	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	49.33	49.45	49.57	49.69	49.81	49.93	50.06	50.19	50.36	50.52
Rated Isc at STC [A] / tolerance ±5% :	15.89	15.95	16.01	16.07	16.13	16.20	16.28	16.36	16.43	16.50
Rated Vmp at STC [V]..... :	40.65	40.82	40.99	41.16	41.32	41.48	41.65	41.81	41.95	42.10
Rated Imp at STC [A] :	15.13	15.19	15.25	15.31	15.37	15.43	15.49	15.55	15.62	15.68
Rated Pmax at STC [W] / tolerance ±3%... :	615	620	625	630	635	640	645	650	655	660
Bifaciality coefficient with tolerance :	ϕIsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	49.33	49.45	49.57	49.69	49.81	49.93	50.06	50.19	50.36	50.52

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Rated Isc at BNPI [A] / tolerance ±5% :	17.61	17.68	17.74	17.81	17.88	17.95	18.04	18.13	18.21	18.29
Rated Vmp at BNPI [V]..... :	40.65	40.82	40.99	41.16	41.32	41.48	41.65	41.81	41.95	42.10
Rated Imp at BNPI [A] :	16.78	16.83	16.91	16.99	17.04	17.12	17.17	17.25	17.31	17.39
Rated Pmax at BNPI [W] / tolerance±3%.. :	682	687	693	699	704	710	715	721	726	732
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.51	19.58	19.65	19.73	19.81	19.88	19.98	20.08	20.17	20.26
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	50.67	50.84	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±5% :	16.57	16.64	-	-	-	-	-	-	-	-
Rated Vmp at STC [V]..... :	42.25	42.42	-	-	-	-	-	-	-	-
Rated Imp at STC [A] :	15.74	15.80	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	665	670	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance :	φIsc=85%±5%, φVoc= 98%±5%, φPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	50.67	50.84	-	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±5% :	18.36	18.44	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	42.25	42.42	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A] :	17.45	17.52	-	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	737	743	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	20.34	20.43	-	-	-	-	-	-	-	-

Module type :	240 cells: TWMNH-60QDxxx (xxx = 560-610, in increment of 5) for cell 18, 21									
Dimensions [mm] / l x w x h..... :	2172 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm] :	1.5				Min-creepage distance [mm]..... :				11.4	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	44.55	44.70	44.85	45.00	45.15	45.30	45.45	45.60	45.75	45.90
Rated Isc at STC [A] / tolerance ±5% :	16.09	16.14	16.19	16.24	16.29	16.34	16.39	16.44	16.49	16.54
Rated Vmp at STC [V]..... :	36.77	36.98	37.19	37.39	37.59	37.80	38.00	38.19	38.39	38.59
Rated Imp at STC [A] :	15.23	15.28	15.33	15.38	15.43	15.48	15.53	15.58	15.63	15.68
Rated Pmax at STC [W] / tolerance ±3%... :	560	565	570	575	580	585	590	595	600	605

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Bifaciality coefficient with tolerance :	$\phi_{lsc}=85\%\pm 5\%$, $\phi_{Voc}= 98\%\pm 5\%$, $\phi_{Pmax}= 85\%\pm 5\%$									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 5\%$:	44.55	44.70	44.85	45.00	45.15	45.30	45.45	45.60	45.75	45.90
Rated Isc at BNPI [A] / tolerance $\pm 5\%$:	17.83	17.89	17.94	18.00	18.05	18.11	18.17	18.22	18.28	18.33
Rated Vmp at BNPI [V]..... :	36.77	36.98	37.19	37.39	37.59	37.80	38.00	38.19	38.39	38.59
Rated Imp at BNPI [A] :	16.89	16.96	17.00	17.07	17.11	17.17	17.22	17.29	17.33	17.39
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	621	627	632	638	643	649	654	660	665	671
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$:	19.75	19.82	19.87	19.94	19.99	20.06	20.13	20.18	20.25	20.30
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance $\pm 5\%$:	46.05	-	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance $\pm 5\%$:	16.59	-	-	-	-	-	-	-	-	-
Rated Vmp at STC [V]..... :	38.78	-	-	-	-	-	-	-	-	-
Rated Imp at STC [A] :	15.73	-	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance $\pm 3\%$.. :	610	-	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance :	$\phi_{lsc}=85\%\pm 5\%$, $\phi_{Voc}= 98\%\pm 5\%$, $\phi_{Pmax}= 85\%\pm 5\%$									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance $\pm 5\%$:	46.05	-	-	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance $\pm 5\%$:	18.39	-	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	38.78	-	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A] :	17.44	-	-	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$.. :	676	-	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$:	20.37	-	-	-	-	-	-	-	-	-

Module type :	216 cells: TWMNH-54QDxxx (xxx = 505-545, in increment of 5) for cell 18, 21									
Dimensions [mm] / l x w x h..... :	1961 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm] :	1.5				Min-creepage distance [mm] :				11.4	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :				Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :				1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :				1.5	
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	40.15	40.30	40.45	40.60	40.75	40.90	41.05	41.20	41.35	-
Rated Isc at STC [A] / tolerance ±5% :	16.00	16.05	16.10	16.15	16.20	16.25	16.30	16.35	16.40	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Rated Vmp at STC [V]..... :	33.01	33.23	33.45	33.66	33.88	34.09	34.30	34.51	34.72	-
Rated Imp at STC [A] :	15.30	15.35	15.40	15.45	15.50	15.55	15.60	15.65	15.70	-
Rated Pmax at STC [W] / tolerance ±3%.. :	505	510	515	520	525	530	535	540	545	-
Bifaciality coefficient with tolerance :	ϕlsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	40.15	40.30	40.45	40.60	40.75	40.90	41.05	41.20	41.35	-
Rated Isc at BNPI [A] / tolerance ±5% :	17.73	17.79	17.84	17.90	17.95	18.01	18.07	18.12	18.18	-
Rated Vmp at BNPI [V]..... :	33.01	33.23	33.45	33.66	33.88	34.09	34.30	34.51	34.72	-
Rated Imp at BNPI [A] :	16.97	17.04	17.08	17.15	17.18	17.25	17.29	17.36	17.40	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	560	566	571	577	582	588	593	599	604	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.64	19.71	19.76	19.83	19.88	19.95	20.02	20.07	20.14	-

Module type :	204 cells: TWMNH-51QDxxx (xxx = 475-515, in increment of 5) for cell 18, 21									
Dimensions [mm] / l x w x h..... :	1906 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm] :	1.5					Min-creepage distance [mm]..... :				11.4
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140 :				Class II
Design load (positive) [Pa] :	See remark (3)					Safety factor (positive) :				1.5
Design load (negative) [Pa] :	See remark (3)					Safety factor (negative)..... :				1.5
Maximum overcurrent protection rating [A] :	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5% :	38.35	38.45	38.55	38.65	38.75	38.85	38.95	39.05	39.15	-
Rated Isc at STC [A] / tolerance ±5% :	15.81	15.83	15.85	15.87	15.89	15.91	15.93	15.95	15.97	-
Rated Vmp at STC [V]..... :	31.71	31.92	32.13	32.33	32.53	32.73	32.93	33.12	33.32	-
Rated Imp at STC [A] :	14.98	15.04	15.10	15.16	15.22	15.28	15.34	15.40	15.46	-
Rated Pmax at STC [W] / tolerance ±3%... :	475	480	485	490	495	500	505	510	515	-
Bifaciality coefficient with tolerance :	ϕIsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	38.35	38.45	38.55	38.65	38.75	38.85	38.95	39.05	39.15	-
Rated Isc at BNPI [A] / tolerance ±5% :	17.52	17.54	17.57	17.59	17.61	17.63	17.66	17.68	17.70	-
Rated Vmp at BNPI [V]..... :	31.71	31.92	32.13	32.33	32.53	32.73	32.93	33.12	33.32	-
Rated Imp at BNPI [A] :	16.62	16.67	16.75	16.80	16.88	16.93	17.01	17.09	17.14	-
Rated Pmax at BNPI [W] / tolerance±3%... :	527	532	538	543	549	554	560	566	571	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	19.60	19.62	19.65	19.67	19.70	19.72	19.75	19.77	19.80	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Module type	192 cells: TWMNH-48QDxxx (xxx = 450-485, in increment of 5) for cell 18, 21									
Dimensions [mm] / l x w x h.....	1762 ±2 x 1134 ±2 x 30/33/35									
Min-distance between strings [mm]	1.5					Min-creepage distance [mm]			11.4	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140			Class II	
Design load (positive) [Pa]	See remark (3)					Safety factor (positive)			1.5	
Design load (negative) [Pa]	See remark (3)					Safety factor (negative).....			1.5	
Maximum overcurrent protection rating [A]:	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	36.51	36.55	36.59	36.63	36.67	36.71	36.75	36.79	-	-
Rated Isc at STC [A] / tolerance ±5%	15.79	15.81	15.83	15.85	15.87	15.89	15.91	15.93	-	-
Rated Vmp at STC [V].....	29.43	29.69	29.95	30.22	30.48	30.75	31.01	31.28	-	-
Rated Imp at STC [A]	15.30	15.33	15.36	15.39	15.42	15.45	15.48	15.51	-	-
Rated Pmax at STC [W] / tolerance ±3% ..	450	455	460	465	470	475	480	485	-	-
Bifaciality coefficient with tolerance	φIsc=85%±5%, φVoc= 98%±5%, φPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%.....	36.51	36.55	36.59	36.63	36.67	36.71	36.75	36.79	-	-
Rated Isc at BNPI [A] / tolerance ±5%	17.50	17.52	17.54	17.57	17.59	17.61	17.63	17.66	-	-
Rated Vmp at BNPI [V].....	29.43	29.69	29.95	30.22	30.48	30.75	31.01	31.28	-	-
Rated Imp at BNPI [A]	16.96	17.01	17.03	17.08	17.10	17.14	17.16	17.20	-	-
Rated Pmax at BNPI [W] / tolerance±3% ..	499	505	510	516	521	527	532	538	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%.....	19.57	19.60	19.62	19.65	19.67	19.70	19.72	19.75	-	-

Module type :	192 cells: TWMNH-48QExxx (xxx = 450-495, in increment of 5) 192 cells: TWMNH-48QWxxx (xxx = 450-495, in increment of 5) for cell 18, 21										
Dimensions [mm] / l x w x h :	1762 ±2 x 1134 ±2 x 30/33/35										
Min-distance between strings [mm] :	1.5				Min-creepage distance [mm] :					11.4	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140 :					Class II	
Design load (positive) [Pa] :	See remark (3)				Safety factor (positive) :					1.5	
Design load (negative) [Pa] :	See remark (3)				Safety factor (negative)..... :					1.5	
Maximum overcurrent protection rating [A] :	35										
Electrical ratings at irradiance level at STC											
Rated Voc at STC [V] / tolerance ±5% :	36.51	36.55	36.59	36.63	36.67	36.71	36.75	36.79	36.83	36.87	
Rated Isc at STC [A] / tolerance ±5% :	15.79	15.81	15.83	15.85	15.87	15.89	15.91	15.93	15.95	15.97	

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Rated Vmp at STC [V]..... :	29.43	29.69	29.95	30.22	30.48	30.75	31.01	31.28	31.54	31.80
Rated Imp at STC [A]	15.30	15.33	15.36	15.39	15.42	15.45	15.48	15.51	15.54	15.57
Rated Pmax at STC [W] / tolerance ±3%.. :	450	455	460	465	470	475	480	485	490	495

Double Glass PV Modules with 1/4 cut 8" TOPCon Mono-crystalline Silicon Solar Cells:

Module type	264 cells: TWMNF-66QDxxx (xxx = 700-770, in increment of 5) for cell 19									
Dimensions [mm] / l x w x h.....	2384 ±2 x 1303 ±2 x 30/33/35									
Min-distance between strings [mm]	1.5					Min-creepage distance [mm]			12.7	
Maximum System Voltage [V]	1500					Safety class acc. to IEC 61140			Class II	
Design load (positive) [Pa]	See remark (3)					Safety factor (positive)			1.5	
Design load (negative) [Pa]	See remark (3)					Safety factor (negative).....			1.5	
Maximum overcurrent protection rating [A]:	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	48.60	48.75	48.90	49.05	49.20	49.35	49.50	49.65	49.80	49.95
Rated Isc at STC [A] / tolerance ±5%	18.33	18.39	18.45	18.51	18.57	18.63	18.69	18.75	18.81	18.87
Rated Vmp at STC [V].....	40.35	40.52	40.69	40.86	41.03	41.20	41.37	41.53	41.69	41.86
Rated Imp at STC [A]	17.35	17.40	17.45	17.50	17.55	17.60	17.65	17.70	17.75	17.80
Rated Pmax at STC [W] / tolerance ±3%..	700	705	710	715	720	725	730	735	740	745
Bifaciality coefficient with tolerance	ϕIsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%.....	48.60	48.75	48.90	49.05	49.20	49.35	49.50	49.65	49.80	49.95
Rated Isc at BNPI [A] / tolerance ±5%	20.31	20.38	20.45	20.51	20.58	20.65	20.71	20.78	20.85	20.91
Rated Vmp at BNPI [V].....	40.35	40.52	40.69	40.86	41.03	41.20	41.37	41.53	41.69	41.86
Rated Imp at BNPI [A]	19.24	19.30	19.35	19.41	19.45	19.52	19.56	19.63	19.67	19.74
Rated Pmax at BNPI [W] / tolerance±3%..	776	782	787	793	798	804	809	815	820	826
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%.....	22.73	22.81	22.88	22.96	23.02	23.10	23.17	23.25	23.32	23.39
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	50.10	50.25	50.40	50.55	50.70	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±5%	18.93	18.99	19.05	19.11	19.17	-	-	-	-	-
Rated Vmp at STC [V].....	42.02	42.18	42.34	42.50	42.66	-	-	-	-	-
Rated Imp at STC [A]	17.85	17.90	17.95	18.00	18.05	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%..	750	755	760	765	770	-	-	-	-	-
Bifaciality coefficient with tolerance	ϕIsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										

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Rated Voc at BNPI [V] / tolerance $\pm 5\%$	50.10	50.25	50.40	50.55	50.70	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance $\pm 5\%$	20.98	21.05	21.11	21.18	21.25	-	-	-	-	-
Rated Vmp at BNPI [V]	42.02	42.18	42.34	42.50	42.66	-	-	-	-	-
Rated Imp at BNPI [A]	19.78	19.85	19.92	19.96	20.02	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance $\pm 3\%$..	831	837	843	848	854	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance $\pm 5\%$	23.47	23.54	23.62	23.69	23.77	-	-	-	-	-

Double Glass PV Modules with 1/3 cut 8" HJT Mono-crystalline Silicon Solar Cells:

Module type	198 cells: TWMHF-66TDxxx (xxx = 720-770, in increment of 5) for cell 22, 23									
Dimensions [mm] / l x w x h.....	2384 ±2 x 1303 ±2 x 30/33/35									
Min-distance between strings [mm]	1.5				Min-creepage distance [mm]				12.55	
Maximum System Voltage [V]	1500				Safety class acc. to IEC 61140				Class II	
Design load (positive) [Pa]	See remark (3)				Safety factor (positive)				1.5	
Design load (negative) [Pa]	See remark (3)				Safety factor (negative).....				1.5	
Maximum overcurrent protection rating [A]:	35									
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	50.10	50.20	50.30	50.40	50.47	50.50	50.53	50.56	50.59	50.62
Rated Isc at STC [A] / tolerance ±5%	18.38	18.41	18.44	18.47	18.50	18.53	18.56	18.59	18.62	18.65
Rated Vmp at STC [V].....	41.77	41.87	41.98	42.08	42.17	42.27	42.38	42.47	42.58	42.67
Rated Imp at STC [A]	17.24	17.32	17.39	17.47	17.55	17.63	17.70	17.78	17.85	17.93
Rated Pmax at STC [W] / tolerance ±3%...	720	725	730	735	740	745	750	755	760	765
Bifaciality coefficient with tolerance	φIsc=85%±5%, φVoc= 98%±5%, φPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%.....	50.10	50.20	50.30	50.40	50.47	50.50	50.53	50.56	50.59	50.62
Rated Isc at BNPI [A] / tolerance ±5%	20.49	20.53	20.56	20.59	20.63	20.66	20.69	20.73	20.76	20.80
Rated Vmp at BNPI [V].....	41.77	41.87	41.98	42.08	42.17	42.27	42.38	42.47	42.58	42.67
Rated Imp at BNPI [A]	19.23	19.33	19.40	19.49	19.57	19.66	19.75	19.83	19.92	20.00
Rated Pmax at BNPI [W] / tolerance±3%...	803	809	814	820	825	831	837	842	848	853
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%.....	23.06	23.10	23.14	23.17	23.21	23.25	23.29	23.33	23.36	23.40
Electrical ratings at irradiance level at STC										
Rated Voc at STC [V] / tolerance ±5%	50.65	-	-	-	-	-	-	-	-	-
Rated Isc at STC [A] / tolerance ±5%	18.68	-	-	-	-	-	-	-	-	-
Rated Vmp at STC [V].....	42.78	-	-	-	-	-	-	-	-	-

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Rated Imp at STC [A] :	18.00	-	-	-	-	-	-	-	-	-
Rated Pmax at STC [W] / tolerance ±3%.. :	770	-	-	-	-	-	-	-	-	-
Bifaciality coefficient with tolerance :	ϕIsc=85%±5%, ϕVoc= 98%±5%, ϕPmax= 85%±5%									
Electrical ratings at irradiance level at BNPI										
Rated Voc at BNPI [V] / tolerance ±5%..... :	50.65	-	-	-	-	-	-	-	-	-
Rated Isc at BNPI [A] / tolerance ±5% :	20.83	-	-	-	-	-	-	-	-	-
Rated Vmp at BNPI [V]..... :	42.78	-	-	-	-	-	-	-	-	-
Rated Imp at BNPI [A] :	20.08	-	-	-	-	-	-	-	-	-
Rated Pmax at BNPI [W] / tolerance±3%.. :	859	-	-	-	-	-	-	-	-	-
Electrical ratings at irradiance level at aBSI										
Rated Isc at aBSI [A] / tolerance ±5%..... :	23.44	-	-	-	-	-	-	-	-	-

BNPI: 1000 W/m² irradiance on the front side, and 135W/m² irradiance on the rear side

aBSI: 1000 W/m² irradiance on the front side, and more than 300W/m² on the rear side

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(See authenticated signature on first page) (CERT engineer)

2. Copy of marking plate:

 TW SOLAR Tongwei Co., Ltd. Add.: No. 588, Middle Section Tianfu Avenue, High-Tech Zone, Chengdu, China (Sichuan) Pilot Free Trade Zone Made in China	STC: 1000W/m ² , 25°C, AM1.5 Module Type: ##### Maximum Power (P _{max}): ##### Open Circuit Voltage (V _{oc}): ##### Short Circuit Current (I _{sc}): ##### Maximum Power Voltage (V _m): ##### Maximum Power Current (I _m): ##### Tested to IEC 61215-1/-1-1/-2:2021 & IEC 61730-1/-2:2023 ##### www.tw-solar.com PV Changes the World	BNPI: Front 1000 W/m ² , Rear 135W/m ² BSI: Front 1000 W/m ² , Rear 300W/m ² P _{max} at BNPI (##): ##### V _{oc} at BNPI (##): ##### I _{sc} at BNPI (##): ##### I _{sc} at BSI: ##### Bifaciality Coefficient (qP _{max}): ##### Bifaciality Coefficient (qV _{oc}): ##### Bifaciality Coefficient (qI _{sc}): #####	Power Selection: ##### Fire Rating: ##### MAX. System Voltage: ##### Module Classification: ##### Series Fuse Rating: ##### Module [T _{se}] _{max} : 70°C Min Design Load: -1600pa, +3600pa Connector Manufacturer: ##### Connector Type: #####	   
 TW SOLAR Tongwei Co., Ltd. Add.: No. 588, Middle Section Tianfu Avenue, High-Tech Zone, Chengdu, China (Sichuan) Pilot Free Trade Zone Made in China	STC: 1000W/m ² , 25°C, AM1.5 Module Type: ##### Maximum Power (P _{max}): ##### Open Circuit Voltage (V _{oc}): ##### Short Circuit Current (I _{sc}): ##### Maximum Power Voltage (V _m): ##### Maximum Power Current (I _m): ##### Tested to IEC 61215-1/-1-1/-2:2021 & IEC 61730-1/-2:2023 ##### www.tw-solar.com PV Changes the World	BNPI: Front 1000 W/m ² , Rear 135W/m ² BSI: Front 1000 W/m ² , Rear 300W/m ² P _{max} at BNPI (##): ##### V _{oc} at BNPI (##): ##### I _{sc} at BNPI (##): ##### I _{sc} at BSI: ##### Bifaciality Coefficient (qP _{max}): ##### Bifaciality Coefficient (qV _{oc}): ##### Bifaciality Coefficient (qI _{sc}): #####	Power Selection: ##### Fire Rating: ##### MAX. System Voltage: ##### Module Classification: ##### Series Fuse Rating: ##### Module [T _{se}] _{max} : 70°C Min Design Load: -1600pa, +3600pa Connector Manufacturer: ##### Connector Type: #####	   
 TW SOLAR 通威股份有限公司 地址: 中国(四川)自由贸易试验区 成都市高新区天府大道中段588号 中国制造	组件型号: ##### 标准测试条件(STC): 1000W/m ² , 25°C, AM1.5 双面铭牌辐照度(BNPI): 正面1000 W/m ² , 背面135W/m ² 双面可靠性辐照度(BSI): 正面1000 W/m ² , 背面300W/m ² 测试标准IEC 61215-1/-1-1/-2:2021 & IEC 61730-1/-2:2023 ##### www.tw-solar.com 光伏改变世界	最大功率(##, W): STC BNPI BSI 开路电压(##, V): ##### 短路电流(##, A): ##### 最大功率点电压(V): ##### 最大功率点电流(A): ##### 最大功率因数: ##### 开路电压双面系数: ##### 短路电流双面系数: #####	功率分档: ##### 组件防火等级: ##### 最大系统电压: ##### 组件防护等级: ##### 最大保险丝额定电流: ##### 第98分位运行温度: 70°C 最小设计载荷: -1600pa, +3600pa 连接器厂家: ##### 连接器型号: #####	   
 TW SOLAR 通威股份有限公司 地址: 中国(四川)自由贸易试验区 成都市高新区天府大道中段588号 中国制造	组件型号: ##### 标准测试条件(STC): 1000W/m ² , 25°C, AM1.5 双面铭牌辐照度(BNPI): 正面1000 W/m ² , 背面135W/m ² 双面可靠性辐照度(BSI): 正面1000 W/m ² , 背面300W/m ² 测试标准IEC 61215-1/-1-1/-2:2021 & IEC 61730-1/-2:2023 ##### www.tw-solar.com 光伏改变世界	最大功率(##, W): STC BNPI BSI 开路电压(##, V): ##### 短路电流(##, A): ##### 最大功率点电压(V): ##### 最大功率点电流(A): ##### 最大功率因数: ##### 开路电压双面系数: ##### 短路电流双面系数: #####	功率分档: ##### 组件防火等级: ##### 最大系统电压: ##### 组件防护等级: ##### 最大保险丝额定电流: ##### 第98分位运行温度: 70°C 最小设计载荷: -1600pa, +3600pa 连接器厂家: ##### 连接器型号: #####	   
 TW SOLAR Tongwei Co., Ltd. Add.: No. 588, Middle Section Tianfu Avenue, High-Tech Zone, Chengdu, China (Sichuan) Pilot Free Trade Zone Made in China	STC: 1000W/m ² , 25°C, AM1.5 Module Type: ##### Maximum Power (P _{max}): ##### Open Circuit Voltage (V _{oc}): ##### Short Circuit Current (I _{sc}): ##### Maximum Power Voltage (V _m): ##### Maximum Power Current (I _m): ##### Tested to IEC 61215-1/-1-1/-2:2021 & IEC 61730-1/-2:2023 ##### www.tw-solar.com PV Changes the World	BNPI: Front 1000 W/m ² , Rear 135W/m ² BSI: Front 1000 W/m ² , Rear 300W/m ² P _{max} at BNPI (##): ##### V _{oc} at BNPI (##): ##### I _{sc} at BNPI (##): ##### I _{sc} at BSI (##): ##### Bifaciality Coefficient (qP _{max}): ##### Bifaciality Coefficient (qV _{oc}): ##### Bifaciality Coefficient (qI _{sc}): #####	Power Selection: ##### Fire Rating: ##### MAX. System Voltage: ##### Module Classification: ##### Series Fuse Rating: ##### Module [T _{se}] _{max} : 70°C Min Design Load: -1600pa, +3600pa Connector Manufacturer: ##### Connector Type: #####	   
 TW SOLAR Tongwei Co., Ltd. Add.: No. 588, Middle Section Tianfu Avenue, High-Tech Zone, Chengdu, China (Sichuan) Pilot Free Trade Zone Made in China	STC: 1000W/m ² , 25°C, AM1.5 Module Type: ##### Maximum Power (P _{max}): ##### Open Circuit Voltage (V _{oc}): ##### Short Circuit Current (I _{sc}): ##### Maximum Power Voltage (V _m): ##### Maximum Power Current (I _m): ##### Tested to IEC 61215-1/-1-1/-2:2021 & IEC 61730-1/-2:2023 ##### www.tw-solar.com PV Changes the World	BNPI: Front 1000 W/m ² , Rear 135W/m ² BSI: Front 1000 W/m ² , Rear 300W/m ² P _{max} at BNPI (##): ##### V _{oc} at BNPI (##): ##### I _{sc} at BNPI (##): ##### I _{sc} at BSI (##): ##### Bifaciality Coefficient (qP _{max}): ##### Bifaciality Coefficient (qV _{oc}): ##### Bifaciality Coefficient (qI _{sc}): #####	Power Selection: ##### Fire Rating: ##### MAX. System Voltage: ##### Module Classification: ##### Series Fuse Rating: ##### Module [T _{se}] _{max} : 70°C Min Design Load: -1600pa, +3600pa Connector Manufacturer: ##### Connector Type: #####	   
 TW SOLAR Tongwei Co., Ltd. Add.: No. 588, Middle Section Tianfu Avenue, High-Tech Zone, Chengdu, China (Sichuan) Pilot Free Trade Zone Made in China	STC: 1000W/m ² , 25°C, AM1.5 Module Type: ##### Maximum Power (P _{max}): ##### Open Circuit Voltage (V _{oc}): ##### Short Circuit Current (I _{sc}): ##### Maximum Power Voltage (V _m): ##### Maximum Power Current (I _m): ##### Tested to IEC 61215-1/-1-1/-2:2021 & IEC 61730-1/-2:2023 ##### www.tongwei.cn PV Changes the World	BNPI: Front 1000 W/m ² , Rear 135W/m ² BSI: Front 1000 W/m ² , Rear 300W/m ² P _{max} at BNPI (##): ##### V _{oc} at BNPI (##): ##### I _{sc} at BNPI (##): ##### I _{sc} at BSI (##): ##### Bifaciality Coefficient (qP _{max}): ##### Bifaciality Coefficient (qV _{oc}): ##### Bifaciality Coefficient (qI _{sc}): #####	Power Selection: ##### Fire Rating: ##### MAX. System Voltage: ##### Module Classification: ##### Series Fuse Rating: ##### Module [T _{se}] _{max} : 70°C Min Design Load: -1600pa, +3600pa Connector Manufacturer: ##### Connector Type: #####	   
 TW SOLAR 通威股份有限公司 地址: 中国(四川)自由贸易试验区 成都市高新区天府大道中段588号 中国制造	组件型号: ##### 标准测试条件(STC): 1000W/m ² , 25°C, AM1.5 双面铭牌辐照度(BNPI): 正面1000 W/m ² , 背面135W/m ² 双面可靠性辐照度(BSI): 正面1000 W/m ² , 背面300W/m ² 测试标准IEC 61215-1/-1-1/-2:2021 & IEC 61730-1/-2:2023 ##### www.tongwei.cn 光伏改变世界	最大功率(##, W): STC BNPI BSI 开路电压(##, V): ##### 短路电流(##, A): ##### 最大功率点电压(V): ##### 最大功率点电流(A): ##### 最大功率因数: ##### 开路电压双面系数: ##### 短路电流双面系数: #####	功率分档: ##### 组件防火等级: ##### 最大系统电压: ##### 组件防护等级: ##### 最大保险丝额定电流: ##### 第98分位运行温度: 70°C 最小设计载荷: -1600pa, +3600pa 连接器厂家: ##### 连接器型号: #####	   
 TW SOLAR Tongwei Co., Ltd. Add.: No. 588, Middle Section Tianfu Avenue, High-Tech Zone, Chengdu, China (Sichuan) Pilot Free Trade Zone Made in China	STC: 1000W/m ² , 25°C, AM1.5 Module Type: ##### Maximum Power (P _{max}): ##### Open Circuit Voltage (V _{oc}): ##### Short Circuit Current (I _{sc}): ##### Maximum Power Voltage (V _m): ##### Maximum Power Current (I _m): ##### Tested to IEC 61215-1/-1-1/-2:2021 & IEC 61730-1/-2:2023 ##### www.tongwei.cn PV Changes the World	BNPI: Front 1000 W/m ² , Rear 135W/m ² BSI: Front 1000 W/m ² , Rear 300W/m ² P _{max} at BNPI (##): ##### V _{oc} at BNPI (##): ##### I _{sc} at BNPI (##): ##### I _{sc} at BSI (##): ##### Bifaciality Coefficient (qP _{max}): ##### Bifaciality Coefficient (qV _{oc}): ##### Bifaciality Coefficient (qI _{sc}): #####	Power Selection: ##### Fire Rating: ##### MAX. System Voltage: ##### Module Classification: ##### Series Fuse Rating: ##### Module [T _{se}] _{max} : 70°C Min Design Load: -1600pa, +3600pa Connector Manufacturer: ##### Connector Type: #####	   
 TW SOLAR 通威股份有限公司 地址: 中国(四川)自由贸易试验区 成都市高新区天府大道中段588号 中国制造	标准测试条件(STC): 1000W/m ² , 25°C, AM1.5 组件型号: ##### 最大功率(##, W): ##### 开路电压(##, V): ##### 短路电流(##, A): ##### 最大功率点电压(V): ##### 最大功率点电流(A): ##### 测试标准IEC 61215-1/-1-1/-2:2021 & IEC 61730-1/-2:2023 ##### www.tongwei.cn 光伏改变世界	功率分档: ##### 组件防火等级: ##### 最大系统电压: ##### 组件防护等级: ##### 最大保险丝额定电流: ##### 第98分位运行温度: 70°C 最小设计载荷: -1600pa, +3600pa 连接器厂家: ##### 连接器型号: #####	功率分档: ##### 组件防火等级: ##### 最大系统电压: ##### 组件防护等级: ##### 最大保险丝额定电流: ##### 第98分位运行温度: 70°C 最小设计载荷: -1600pa, +3600pa 连接器厂家: ##### 连接器型号: #####	   

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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3. List of critical materials and components:

3.1 Cells

No.	Manufacturer	Type	Technical Data	Remark
1	Tongwei Solar (Chengdu) Co., Ltd.	M182GBTCNBPTOPCon bifacial cell	Dimension (w x l) = 182±3mm x 91±10%mm Thickness = 130±20µm Cell area = 165.62cm ² 16 Busbars	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
2	Tongwei Solar (Chengdu) Co., Ltd.	M210IBTCNBPTOPCon bifacial cell	Dimension (w x l) = 210±3 mm x 105±3 mm Thickness = 130±10% µm Cell area = 220.5 cm ² 18 busbars	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
3	Tongwei Solar (Chengdu) Co., Ltd.	M182AGBTCNBPTOPCon bifacial cell	Dimension (w x l) = 182±3mm x 105±3mm Thickness = 130±20µm Cell area = 190.92cm ² 16 Busbars	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
4	Tongwei Solar (Chengdu) Co., Ltd.	M210IBPERCBP PERC bifacial cell	Dimension (w x l) = 210±3mm x 105±3mm Thickness = 160 (+30/-10) µm Cell area = 220.5 cm ²	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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	Tongwei Solar (Anhui) Co., Ltd.		18 busbars	Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
5	Tongwei Solar (Chengdu) Co., Ltd.	M210CBPERCBP PERC bifacial cell	Dimension =210±3mm x 105±3mm Thickness = 150±20µm Cell area = 220.5cm ² 12 Busbars	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy(Jintang) Co. Ltd.			Covered by main tested type
6	Tongwei Solar (Chengdu) Co., Ltd.	M182ABPERCBP SE PERC bifacial cell	Dimension =182±3mm x 91±10%mm Thickness = 150±20µm Cell area = 165.62cm ² 10 Busbars	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy(Jintang) Co. Ltd.			Covered by main tested type
7	Tongwei Solar (Chengdu) Co., Ltd.	M182GBPERCBP SE PERC bifacial cell	Dimension =182±3mm x 91±10%mm Thickness = 160±20µm Cell area = 165.62cm ² 16 Busbars	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

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Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(Signatures of TÜV NORD CERT engineer)

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	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy(Jintang) Co. Ltd.			Covered by main tested type
8	Tongwei Solar (Chengdu) Co., Ltd.	M182AGBPERCB P PERC bifacial cell	Dimension (w x l) = 182±3mm x 105±3mm Thickness = 160+30/-10µm Cell area = 190.92cm ² 16 Busbars	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy(Jintang) Co. Ltd.			Covered by main tested type
9	Tongwei Solar (Chengdu) Co., Ltd.	TW210Y218 HJT bifacial cell	Dimension (w x l) = 210±3mm x 105±3mm Thickness = 130±20µm Cell area = 220.5cm ² 18 Busbars	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy(Jintang) Co. Ltd.			Covered by main tested type
10	Tongwei Solar (Chengdu) Co., Ltd.	M210IBHJTBP HJT bifacial cell	Dimension (w x l) = 210±3mm x 105±3mm Thickness = 110±20µm Cell area = 220.5cm ² 18 Busbars	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
11	Tongwei Solar (Chengdu) Co., Ltd.	M210OBHJTBP HJT bifacial cell	Dimension (w x l) = 210±3mm x 105±3mm	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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	Tongwei Solar (Hefei) Co., Ltd.		Thickness = 110±20µm Cell area = 220.5cm ² 0 Busbar Used with 24 pcs Internal wiring (cell-to-cell connection)	Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
12	Tongwei Solar (Chengdu) Co., Ltd.	M182AKBTCONBP TOPCon bifacial cell	Dimension (w x l) = 182±3mm x 105±3mm Thickness = 130±20µm Cell area = 190.925cm ² 0 Busbar Used with 20 pcs Internal wiring (cell-to-cell connection)	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
13	Tongwei Solar (Chengdu) Co., Ltd.	M182KBTCONBP TOPCon bifacial cell	Dimension (w x l) = 182.2±0.5mm x 91.875±0.5mm Thickness = 130±20µm Cell area = 167.36cm ² 0 Busbar Used with 20 pcs Internal wiring (cell-to-cell connection)	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
14	Tongwei Solar (Chengdu) Co., Ltd.	M210OBTCONBP TOPCon bifacial cell	Dimension (w x l) = 210±0.5mm x 105±0.5mm Thickness = 130±20µm Cell area = 220.48cm ² 0 Busbar Used with 24 pcs Internal wiring (cell-to-cell connection)	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
15	Tongwei Solar (Chengdu) Co., Ltd.	M182A0BTBCBP N-Type bifacial solar cell	Dimension (w x l) = 182.25 ±3mm x 105.25 ±3mm Thickness = 130 ±10% μm Cell area = 191.81cm ² 0 Busbar Used with 20 pcs Internal wiring (cell-to-cell connection)	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
16	Tongwei Solar (Chengdu) Co., Ltd.	M182AKBTBCBP N-Type bifacial solar cell	Dimension (w x l) = 182.25 ±3mm x 105.25 ±3mm Thickness = 130 ±10% μm Cell area = 191.81cm ² 20 Busbar	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
17	Tongwei Solar (Chengdu) Co., Ltd.	M182EGBTCONBP TOPCon bifacial cell	Dimension (w x l) = 182.3 ±0.5mm x 71.4±0.5mm Thickness = 130 ±10% μm Cell area = 128.58~131.44cm ² 16 Busbar	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(CERT engineer)

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signature on first page

18	Tongwei Solar (Chengdu) Co., Ltd.	M182FGBTCONBP TOPCon bifacial cell	Dimension (w x l) = 182.3 ±0.5mm x 53.35±0.5mm Thickness = 130 ±10% μm Cell area = 95.84~98.44cm ² 16 Busbar	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
19	Tongwei Solar (Chengdu) Co., Ltd.	M210CIBTCONBP TOPCon bifacial cell	Dimension (w x l) = 210.6±0.5mm x 53.4±0.5mm Thickness = 130 ±10% μm Cell area = 112.44~112.46cm ² 18 Busbar	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
20	Tongwei Solar (Chengdu) Co., Ltd.	M182E20BTCONBP TOPCon bifacial cell	Dimension (w x l) = 182.3 ±0.5mm x 71.6±0.5mm Thickness = 130 ±10% μm Cell area = 128.90~131.80cm ² 0 Busbar Used with 20 pcs Internal wiring (cell-to-cell connection)	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
21	Tongwei Solar (Chengdu) Co., Ltd.	M182F20BTCONBP TOPCon bifacial cell	Dimension (w x l) = 182.3 ±0.5mm x 53.35±0.5mm Thickness = 130 ±10% μm Cell area = 95.84~98.44cm ² 0 Busbar	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S. See authenticated signature on first page CERT engineer)

	Tongwei Solar (Meishan) Co., Ltd.		Used with 20 pcs Internal wiring (cell-to-cell connection)	Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
22	Tongwei Solar (Chengdu) Co., Ltd.	M210OBHJTBP HJT bifacial cell	Dimension (w x l) =210.6 ±3mm x 71.7±3mm Thickness = 110 ±10% μm Cell area = 150.96~151.00cm ² 24 Busbar	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Tested with PV modules
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type
23	Tongwei Solar (Chengdu) Co., Ltd.	M210IBHJTBP HJT bifacial cell	Dimension (w x l) =210.6 ±3mm x 71.7±3mm Thickness = 110 ±10% μm Cell area = 150.96~151.00cm ² 18 Busbar	Covered by main tested type
	Tongwei Solar (Hefei) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Anhui) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Meishan) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Jintang) Co., Ltd.			Covered by main tested type
	Tongwei Solar (Pengshan) Co.Ltd.			Covered by main tested type
	Tonghe New Energy (Jintang) Co. Ltd.			Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(See authenticated signature on first page) CERT engineer)

3.2 Front cover

No.	Manufacturer	Type	Technical Data	Remark
1	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 1.Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd. Zhejiang Jiafu Glass Co. Ltd. Flat (Nantong) Solar Glass Co. Ltd. 2. Changzhou Almaden Co., Ltd. 3. SLT Special Glass (Jiangsu) Co., Ltd. 4. XINYI PV GLASS HOLDING (ANHUI) LTD. 5. Anhui Shengshi New Energy Materials Technology Co., Ltd. CNBM(YIXING) New Energy Resources Co., Ltd. CNBM TONGCHENG New Energy Material Co., Ltd. CNBM(HEFEI) New Energy Resources Co., Ltd. Triumph (Zigong) New Energy Resources Co., Ltd. TG Fujian Photovoltaic Glass Co., Ltd. Shuyang Xinda New Material Co. Ltd. 6. ANHUI CSG NEW ENERGY MATERIAL TECHNOLOGY CO., LTD. CSG (Suzhou) New Energy Management Co.,Ltd. 7. Wujun Chongqing Solar Co., Ltd 8. IRICO GROUP NEW ENERGY COMPANY LIMITED 9. Hubei Yijun Yaoneng New Material CO., Ltd (Pervious name: Jingzhou Nengyao New Material CO., Ltd.) 10.Zhejiang Ninghai Kibing New Energy Management Co., Ltd 11. Heyou Chongqing Solar Energy Co., Ltd. 12. Guangxi Xinfuxing Silicon Technology Co., Ltd.	AR Coating semi tempered Glass	Thickness = 2.0±10% mm	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

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No.	Manufacturer	Type	Technical Data	Remark
	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 1.Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd. Zhejiang Jiafu Glass Co. Ltd. Flat (Nantong) Solar Glass Co. Ltd. 2. Changzhou Almaden Co., Ltd. 3. XINYI PV GLASS HOLDING (ANHUI) LTD. 4. CNBM TONGCHENG New Energy Material Co., Ltd. (China building materials Tong Cheng new energy materials co., Ltd)	AR Coating semi tempered Glass	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Covered by main tested type
2	Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd. Zhejiang Jiafu Glass Co. Ltd. Flat (Nantong) Solar Glass Co. Ltd.	AR Coating tempered Glass	Thickness = 2.5±10% mm	Tested with PV modules
		AR Coating semi tempered Glass	Thickness = 2.0±10% mm	Tested with PV modules
			Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Tested with PV modules
3	Changzhou Almaden Co., Ltd.	AR coating semi tempered glass	Thickness = 2.0±10% mm	Tested with PV modules
			Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Tested with PV modules
4	SLT Special Glass (Jiangsu) Co., Ltd.	AR coating semi tempered glass	Thickness = 2.0±10% mm	Tested with PV modules
5	Anhui Shengshi New Energy Materials Technology Co., Ltd. CNBM(YIXING) New Energy Resources Co., Ltd. CNBM TONGCHENG New Energy Material Co., Ltd. CNBM(HEFEI) New Energy Resources Co., Ltd. Triumph (Zigong) New Energy Resources Co., Ltd. TG Fujian Photovoltaic Glass Co., Ltd. Shuyang Xinda New Material Co. Ltd.	AR Coating semi tempered Glass	Thickness = 2.0±10% mm	Tested with PV modules
6	XINYI PV GLASS HOLDING (ANHUI) LTD.	AR Coating semi tempered Glass	Thickness = 2.0±10% mm	Tested with PV modules
			Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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No.	Manufacturer	Type	Technical Data	Remark
7	ANHUI CSG NEW ENERGY MATERIAL TECHNOLOGY CO., LTD. CSG (Suzhou) New Energy Management Co., Ltd.	AR coating semi tempered glass	Thickness = 2.0±10%mm	Tested with PV modules
8	Wujun Chongqing Solar Co., Ltd	AR coating semi tempered glass	Thickness = 2.0±10%mm	Tested with PV modules
9	IRICO GROUP NEW ENERGY COMPANY LIMITED	AR coating semi tempered glass	Thickness = 2.0±10%mm	Tested with PV modules
10	Hubei Yijun Yaoneng New Material CO., Ltd (Previous name: Jingzhou Nengyao New Material CO., Ltd.)	AR coating semi tempered glass	Thickness = 2.0±10%mm	Tested with PV modules
11	Zhejiang Ninghai Kibing New Energy Management Co., Ltd	AR coating semi tempered glass	Thickness = 2.0±10%mm	Tested with PV modules
12	Heyou Chongqing Solar Energy Co., Ltd.	AR coating semi tempered glass	Thickness = 2.0±10%mm	Tested with PV modules
13	CNBM TONGCHENG New Energy Material Co., Ltd. (China building materials Tong Cheng new energy materials co., Ltd)	AR coating semi tempered glass	Thickness = 1.6±10% mm For module type: 48HC/HD/HE/HW xxx or PV modules smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Tested with PV modules
14	Guangxi Xinfuxing Silicon Technology Co., Ltd.	AR coating semi tempered glass	Thickness = 2.0±10%mm	Tested with PV modules

3.3 Rear cover

No.	Manufacturer	Type	Technical Data	Remark
1	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 1. Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd. Zhejiang Jiafu Glass Co. Ltd. Flat (Nantong) Solar Glass Co. Ltd. 2. Changzhou Almaden Co., Ltd. 3. SLT Special Glass (Jiangsu) Co., Ltd. 4. XINYI PV GLASS HOLDING (ANHUI) LTD.	Semi tempered glass (white grid)	Thickness = 2.0±10% mm	Tested with PV modules
		Semi tempered glass	Thickness = 2.0±10% mm	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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No.	Manufacturer	Type	Technical Data	Remark
	5. Anhui Shengshi New Energy Materials Technology Co., Ltd. CNBM(YIXING) New Energy Resources Co., Ltd. CNBM TONGCHENG New Energy Material Co., Ltd. CNBM(HEFEI) New Energy Resources Co., Ltd. Triumph (Zigong) New Energy Resources Co., Ltd. TG Fujian Photovoltaic Glass Co., Ltd. Shuyang Xinda New Material Co. Ltd. 6. ANHUI CSG NEW ENERGY MATERIAL TECHNOLOGY CO., LTD. CSG (Suzhou) New Energy Management Co.,Ltd. 7. Wujun Chongqing Solar Co., Ltd 8. IRICO GROUP NEW ENERGY COMPANY LIMITED 9. Hubei Yijun Yaoneng New Material CO., Ltd (Previous name:Jingzhou Nengyao New Material CO., Ltd.) 10.Zhejiang Ninghai Kibing New Energy Management Co., Ltd 11.Heyou Chongqing Solar Energy Co., Ltd. 12. Guangxi Xinfuxing Silicon Technology Co., Ltd.	Semi tempered glass (black grid)	Thickness = 2.0±10% mm	Tested with PV modules
	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 1.Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd. Zhejiang Jiafu Glass Co. Ltd. Flat (Nantong) Solar Glass Co. Ltd.	Semi tempered glass (white grid)	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Covered by main tested type
	2. Changzhou Almaden Co., Ltd. 3. XINYI PV GLASS HOLDING (ANHUI) LTD. 4. CNBM TONGCHENG New Energy Material Co., Ltd. (China building materials Tong Cheng new energy materials co., Ltd)	Semi tempered glass	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Covered by main tested type
	2. Changzhou Almaden Co., Ltd. 3. XINYI PV GLASS HOLDING (ANHUI) LTD. 4. CNBM TONGCHENG New Energy Material Co., Ltd. (China building materials Tong Cheng new energy materials co., Ltd)	Semi tempered glass (black grid)	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HExxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HExxx	Tested with PV modules
	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 1.Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd.	AR coating semi tempered glass	Thickness = 2.0±10% mm	Covered by main tested type
	1.Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd.	AR coating semi tempered glass (white grid)	Thickness = 2.0±10% mm	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S

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CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
	Zhejiang Jiafu Glass Co. Ltd. Flat (Nantong) Solar Glass Co. Ltd. 2. XINYI PV GLASS HOLDING (ANHUI) LTD.	AR coating semi tempered glass (black grid)	Thickness = 2.0±10% mm	Covered by main tested type
2.	Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd. Zhejiang Jiafu Glass Co. Ltd. Flat (Nantong) Solar Glass Co. Ltd.	Semi tempered glass	Thickness = 2.5±10%mm	Tested with PV modules
		Semi tempered glass / AR coating semi tempered glass	Thickness = 2.0±10% mm	Tested with PV modules, AR coating semi tempered glass Covered by main tested type
		Semi tempered glass	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Covered by main tested type
		Semi tempered glass/ AR coating semi tempered glass (white grid)	Thickness = 2.0±10% mm	Tested with PV modules, AR coating semi tempered glass Covered by main tested type
		Semi tempered glass (white grid)	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Covered by main tested type
		Semi tempered glass (black grid)	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HExxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HExxx	Tested with PV modules
		Semi tempered glass / AR coating semi tempered glass (black grid)	Thickness = 2.0±10% mm	Covered by main tested type
3	Changzhou Almaden Co., Ltd.	Semi tempered glass	Thickness = 2.0±10% mm	Tested with PV modules
			Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HWxxx	Covered by main tested type
		Semi tempered glass (black grid)	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HExxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HExxx	Tested with PV modules
			Thickness = 2.0±10% mm	Covered by main tested type
		Semi tempered glass (white grid)	Thickness = 2.0±10% mm	Covered by main tested type
			Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(Signatures of TÜV NORD CERT engineer)

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signature on first page

No.	Manufacturer	Type	Technical Data	Remark
4	SLT Special Glass (Jiangsu) Co., Ltd.	Semi tempered glass (white grid)	Thickness = 2.0±10% mm	Tested with PV modules
		Semi tempered glass	Thickness = 2.0±10% mm	Covered by main tested type
5	XINYI PV GLASS HOLDING (ANHUI) LTD.	Semi tempered glass / AR coating semi tempered glass (white grid)	Thickness = 2.0±10% mm	Tested with PV modules AR coating semi tempered glass Covered by main tested type
		Semi tempered glass / AR coating semi tempered glass (black grid)	Thickness = 2.0±10% mm	Covered by main tested type
		Semi tempered glass / AR coating semi tempered glass	Thickness = 2.0±10% mm	Covered by main tested type
		Semi tempered glass	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Covered by main tested type
		Semi tempered glass (black grid)	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HExxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HExxx	Tested with PV modules
		Semi tempered glass (white grid)	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Covered by main tested type
6	Anhui Shengshi New Energy Materials Technology Co., Ltd. CNBM(YIXING) New Energy Resources Co., Ltd. CNBM TONGCHENG New Energy Material Co., Ltd. CNBM(HEFEI) New Energy Resources Co., Ltd. Triumph (Zigong) New Energy Resources Co., Ltd. TG Fujian Photovoltaic Glass Co., Ltd. Shuyang Xinda New Material Co. Ltd.	Semi tempered glass (white grid)	Thickness = 2.0±10% mm	Tested with PV modules
		Semi tempered glass	Thickness = 2.0±10% mm	Covered by main tested type
7	ANHUI CSG NEW ENERGY MATERIAL TECHNOLOGY CO., LTD. CSG (Suzhou) New Energy Management Co.,Ltd.	Semi tempered glass (white grid)	Thickness = 2.0±10%mm	Tested with PV modules
		Semi tempered glass	Thickness = 2.0±10%mm	Covered by main tested type
8	Wujun Chongqing Solar Co., Ltd	Semi tempered glass (white grid)	Thickness = 2.0±10%mm	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S) See authenticated signature on first page (CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
		Semi tempered glass	Thickness = 2.0±10%mm	Covered by main tested type
9	IRICO GROUP NEW ENERGY COMPANY LIMITED	Semi tempered glass (white grid)	Thickness = 2.0±10%mm	Tested with PV modules
		Semi tempered glass	Thickness = 2.0±10%mm	Covered by main tested type
10	Hubei Yijun Yaoneng New Material CO., Ltd (Pervious name: Jingzhou Nengyao New Material CO., Ltd.)	Semi tempered glass (white grid)	Thickness = 2.0±10%mm	Tested with PV modules
		Semi tempered glass	Thickness = 2.0±10%mm	Covered by main tested type
11	Zhejiang Ninghai Kibing New Energy Management Co., Ltd	Semi tempered glass (white grid)	Thickness = 2.0±10%mm	Tested with PV modules
		Semi tempered glass	Thickness = 2.0±10%mm	Covered by main tested type
12	Heyou Chongqing Solar Energy Co., Ltd.	Semi tempered glass (white grid)	Thickness = 2.0±10%mm	Tested with PV modules
		Semi tempered glass	Thickness = 2.0±10%mm	Covered by main tested type
13	CNBM TONGCHENG New Energy Material Co., Ltd. (China building materials Tong Cheng new energy materials co., Ltd)	Semi tempered glass	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Covered by main tested type
		Semi tempered glass(black grid)	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HExxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HExxx	Tested with PV modules
			Thickness = 2.0±10% mm	Covered by main tested type
		Semi tempered glass (white grid)	Thickness = 1.6±10% mm For module type: TWMNH-48HC/HD/HE/HW xxx or PV moudles smaller in dimensions than TWMNH-48HC/HD/HE/HW xxx	Covered by main tested type
14	Guangxi Xinfuxing Silicon Technology Co., Ltd.	Semi tempered glass	Thickness = 2.0±10%mm	Tested with PV modules

3.4 Encapsulant

No.	Manufacturer	Type	Technical Data	Remark
1(Combine with mono cell 1, 2, 3, 12, 13, 14, 15, 16, 17,18, 19, 20, 21)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	TF4	POE Thickness = 0.2mm - 0.9mm	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(See authenticated signature on first page) CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
2(Combine with mono cell 1, 2, 3, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd. Type:TF4	TWPT01	POE Thickness = 0.2mm - 0.9mm	Covered by main tested type
3 (Combine with mono cell 1, 2, 3, 9, 10, 11, 12, 13, 14, 17, 18, 19, 20, 21, 22, 23)	Shanghai HIUV New Materials Co., Ltd Chengdu HIUV New Material Technology Co., Ltd.	P507 (EPE, front side) P507 (EPE, rear side)	Thickness = 0.2mm - 0.8mm for both CTI = 600 (V)	Tested with PV modules
4 (Combine with mono cell 1, 2, 3, 9, 10, 11, 12, 13, 14, 17, 18, 19, 20, 21, 22, 23)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Shanghai HIUV New Materials Co., Ltd Chengdu HIUV New Material Technology Co., Ltd. Type: P507 (EPE, front side) P507 (EPE, rear side)	TWPET02 (EPE, front side) TWPET02 (EPE, rear side)	Thickness = 0.2mm -0.8mm CTI = 600 (V)	Covered by main tested type
5 (Combine with mono cell 4, 5, 6, 7, 8)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	F406P (front side, EVA) EP304 (rear side, EVA-POE multilayer)	F406P Thickness = 0.4mm - 0.7mm PTI = 600 (V) EP304 Thickness = 0.4mm - 0.7mm CTI = 600 (V)	Tested with PV modules
6 (Combine with mono cell 4, 5, 6, 7, 8)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd. Type: F406P (front side, EVA) EP304 (rear side, EVA-POE multilayer)	TWET01 (front side, EVA) TWPET01 (rear side, EVA-POE multilayer)	TWET01 Thickness = 0.4mm - 0.7mm CTI = 600 (V) TWPET01 Thickness = 0.4mm - 0.7mm CTI = 600 (V)	Covered by main tested type
7 (Combine with mono cell 4, 5, 6, 7, 8)	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	SV-15296P (front side) CO-556 (rear side)	SV-15296P Thickness = 0.4mm - 0.7mm CTI = 600 (V) CO-556 Thickness = 0.4mm - 0.7mm CTI = 600 (V)	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(See authenticated signature on first page) CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
8 (Combine with mono cell 4, 5, 6, 7, 8)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd. Type:SV-15296P (front side) CO-556 (rear side)	TWET03 (front side) TWPET03 (rear side)	TWET03 Thickness = 0.4mm - 0.7mm CTI = 600 (V) TWPET03 Thickness = 0.4mm - 0.7mm CTI = 600 (V)	Covered by main tested type
9 (Combine with mono cell 4, 5, 6, 7, 8)	3M China Limited Zhejiang Sinopont Technology Co., Ltd. Shanxi Sinopont Technology Co.,Ltd	EVA9110T (front side) PO8110e (rear side)	EVA9110T Thickness = 0.35mm - 0.7mm CTI = 600 (V) PO8110e Thickness = 0.35mm - 0.7mm CTI = 600 (V)	Tested with PV modules
10 (Combine with mono cell 4, 5, 6, 7, 8)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 3M China Limited Zhejiang Sinopont Technology Co., Ltd. Shanxi Sinopont Technology Co.,Ltd Type: EVA9110T(front side) PO8110e (rear side)	TWET04(front side) TWPET04(rear side)	TWET04 Thickness =0.35mm - 0.7mm CTI = 600 (V) TWPET04 Thickness =0.35mm - 0.7mm CTI = 600 (V)	Covered by main tested type
11 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	EP304 (front side, EVA-POE multilayer) F406P (rear side, EVA)	EP304 Thickness = 0.3mm - 0.7mm CTI = 600 (V) F406P: Thickness = 0.3mm - 0.7mm PTI = 600 (V)	Tested with PV modules
12 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd. Type: EP304 (front side, EVA-POE multilayer) F406P (rear side, EVA))	TWPET01 (front side, EVA-POE multilayer) TWET01 (rear side, EVA)	TWPET01 Thickness = 0.3mm - 0.7mm CTI = 600 (V) TWET01 Thickness = 0.3mm - 0.7mm CTI = 600 (V)	Covered by main tested type
13 (Combine with mono cell 4, 5, 6, 7, 8)	Shanghai HIUV New Materials Co., Ltd Chengdu HIUV New Material Technology Co., Ltd.	S201MT1 (EVA, front side) P507 (EPE, rear side)	S201MT1 Thickness = 0.60±0.1mm CTI = 600 (V) P507 Thickness = 0.60±0.1mm CTI = 600 (V)	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(See authenticated signature on first page) CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
14 (Combine with mono cell 4, 5, 6, 7, 8)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd. Type: S201MT1 (EVA, front side) P507 (EPE, rear side)	TWET02 (EVA, front side) TWPET02 (EPE rear side)	TWET02 Thickness = 0.40 - 0.80 mm CTI = 600 (V) TWPT02 Thickness = 0.40 - 0.80 mm CTI = 600 (V)	Covered by main tested type
15 (Combine with mono cell 4, 5, 6, 7, 8)	Cybrid Technologies Inc.	Cybright T11 (EVA, front side) Cybright T22H (POE, rear side)	Cybright T11 Thickness = 0.55±0.1mm CTI = 600 (V) Cybright T22H Thickness = 0.55±0.1mm CTI = 600 (V)	Tested with PV modules
16 (Combine with mono cell 1, 2, 3, 12,13, 14, 17, 18, 19, 20, 21)	3M China Limited Zhejiang Sinopont Technology Co., Ltd. Shanxi Sinopont Technology Co.,Ltd	PO8110 / 8110 (POE)	Thickness = 0.35mm - 0.7mm for both CTI = 600 (V)	Tested with PV modules
17 (Combine with mono cell 1, 2, 3, 12,13, 14, 17, 18, 19, 20, 21)	3M China Limited Zhejiang Sinopont Technology Co., Ltd. Shanxi Sinopont Technology Co.,Ltd	PO8110 / 8110 (POE, front side) EVA9110T/9110T (EVA, rear side)	Thickness = 0.35mm - 0.7mm for both CTI = 600 (V)	Tested with PV modules
18 (Combine with mono cell 1, 2, 3, 12,13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 3M China Limited Zhejiang Sinopont Technology Co., Ltd. Shanxi Sinopont Technology Co.,Ltd Type: PO8110 / 8110 (POE, front side) EVA9110T/9110T (EVA, rear side)	TWPT04 (POE, front side) TWET04(EVA, rear side)	TWPT04 Thickness = 0.35mm - 0.7mm CTI = 600 (V) TWET04 Thickness = 0.35mm - 0.7mm CTI = 600 (V)	Covered by main tested type
19 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Shanghai HIUV New Materials Co., Ltd Chengdu HIUV New Material Technology Co., Ltd.	P507 (EPE, front side) S201MT1 (EVA, rear side)	Thickness = 0.35mm - 0.7mm for both CTI = 600 (V)	Tested with PV modules
20 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Shanghai HIUV New Materials Co., Ltd Chengdu HIUV New Material Technology Co., Ltd. Type: P507 (EPE, front side) S201MT1 (EVA, rear side)	TWPET02 (EPE, front side) TWET02 (EVA, rear side)	TWPET02 Thickness = 0.35mm - 0.7mm CTI = 600 (V) TWET02 Thickness = 0.35mm - 0.7mm CTI = 600 (V)	Covered by main tested type
21 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd.	P507 (POE, front side) S201MT1 (EVA, rear side)	Thickness = 0.35mm - 0.7mm for both CTI = 600 (V)	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(S) (CERT engineer)

See authenticated signature on first page

No.	Manufacturer	Type	Technical Data	Remark
22 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd. Type: P507 (POE, front side) S201MT1 (EVA, rear side)	TWPT02 (POE, front side) TWET02 (EVA, rear side)	TWPT02 Thickness = 0.35mm - 0.7mm CTI = 600 (V) TWET02 Thickness = 0.35mm - 0.7mm CTI = 600 (V)	Covered by main tested type
23 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	SE-556 (POE, front side) SV-15296P (EVA, rear side)	Thickness = 0.4mm - 0.7mm for both CTI = 600 (V)	Tested with PV modules
24 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd. Type: SE-556 (POE, front side) SV-15296P (EVA, rear side)	TWPT03 (POE, front side) TWET03 (EVA, rear side)	TWPT03 Thickness = 0.4mm - 0.7mm CTI = 600 (V) TWET03 Thickness = 0.4mm - 0.7mm CTI = 600 (V)	Covered by main tested type
25 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	CO-556 (EPE, front side) SV-15296P (EVA, rear side)	Thickness = 0.4mm - 0.7mm for both CTI = 600 (V)	Tested with PV modules
26 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd. Type: CO-556 (EPE, front side) SV-15296P (EVA, rear side)	TWPET03 (EPE, front side) TWET03 (EVA, rear side)	TWPET03 Thickness = 0.4mm - 0.7mm CTI = 600 (V) TWET03 Thickness = 0.4mm - 0.7mm CTI = 600 (V)	Covered by main tested type
27 (Combine with mono cell 4, 5, 6, 7, 8)	Changzhou Betterial Film Technologies Co., Ltd.	B601HP (front side) B602M (rear side)	Thickness = 0.20mm - 0.8mm for both CTI = 600 (V)	Tested with PV modules
28 (Combine with mono cell 4, 5, 6, 7, 8)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Betterial Film Technologies Co., Ltd. Type: B601HP (front side) B602M (rear side)	TWET05 (front side) TWPET05 (rear side)	Thickness = 0.20mm - 0.8mm for both CTI = 600 (V)	Covered by main tested type
29 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Suzhou Yisheng Optical Material Co., Ltd.	InshineP601 (POE, front side) InshineE701 (EVA, rear side)	InshineP601 Thickness = 0.3mm - 0.7mm CTI = 600 (V) InshineE701 Thickness = 0.3mm - 0.7mm CTI = 600 (V)	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S. [Signature] CERT engineer)

See authenticated signature on first page

No.	Manufacturer	Type	Technical Data	Remark
30(Combine with mono cell 9, 10, 11, 22, 23)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	CF15& EP304 (EPE, front side) CF15& EP304 (EPE, rear side)	Thickness = 0.10mm - 0.20mm for CF15 Thickness = 0.20mm - 0.7mm for EP304 CTI = 600 (V)	Tested with PV modules
31(Combine with mono cell 9, 10, 11, 22, 23)	Cybrid Technologies Inc	WT22H (EVA, front side) T22H (EPE, rear side)	Thickness = 0.4mm - 0.7mm CTI = 600 (V)	Tested with PV modules
32 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	TF4 (POE, front side) F406P (EVA, rear side)	Thickness = 0.35mm - 0.7mm for both PTI = 600 (V)	Tested with PV modules
33(Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 3M China Limited Zhejiang Sinopont Technology Co., Ltd. Shanxi Sinopont Technology Co.,Ltd Type:8110/PO8110 (POE))	TWPT04(POE)	Thickness = 0.30 - 0.80mm PTI = 600 (V)	Covered by main tested type
34 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Changzhou Betterial Film Technologies Co., Ltd.	B601HP (front side) B601HP (rear side)	Thickness = 0.20mm - 0.8mm for both CTI = 600 (V)	Tested with PV modules
35 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Betterial Film Technologies Co., Ltd. Type: B601HP (front side) B601HP (rear side)	TWET05 (front side) TWET05 (rear side)	Thickness = 0.20mm - 0.8mm for both CTI = 600 (V)	Covered by main tested type
36 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	3M China Limited Zhejiang Sinopont Technology Co., Ltd. Shanxi Sinopont Technology Co.,Ltd	EVA9110T (front side) EVA9110T (rear side)	Thickness = 0.20mm - 0.8mm for both CTI = 600 (V)	Tested with PV modules
37 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 3M China Limited Zhejiang Sinopont Technology Co., Ltd. Shanxi Sinopont Technology Co.,Ltd Type: EVA9110T (front side) EVA9110T (rear side)	TWET04(front side) TWET04((rear side)	Thickness =0.20mm - 0.8mm for both CTI = 600 (V)	Covered by main tested type
38 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	F406P (front side, EVA) F406P (rear side, EVA)	Thickness = 0.2mm - 0.8mm PTI = 600 (V)	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(S) See authenticated signature on first page (CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
39 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd. Type: F406P (front side, EVA) F406P (rear side EVA)	TWET01 (front side, EVA) TWET01 (rear side, EVA)	Thickness = 0.2mm - 0.8mm CTI = 600 (V)	Covered by main tested type
40 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	SV-15296P (front side,EVA) SV-15296P (rear side, EVA)	Thickness = 0.2mm - 0.8mm CTI = 600 (V)	Tested with PV modules
41 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd. Type: SV-15296P (EVA, front side) SV-15296P (EVA, rear side)	TWET03 (EVA, front side) TWET03 (EVA, rear side)	Thickness = 0.2mm - 0.8mm CTI = 600 (V)	Covered by main tested type
42 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Shanghai HIUV New Materials Co., Ltd Chengdu HIUV New Material Technology Co., Ltd.	S201MT1 (EVA, front side) S201MT1 (EVA, rear side)	Thickness = 0.2mm - 0.8mm CTI = 600 (V)	Tested with PV modules
43 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd. Type: S201MT1 (EVA, front side) S201MT1 (EVA, rear side)	TWET02 (EVA, front side) TWET02 (EVA, rear side)	Thickness = 0.2mm - 0.8mm CTI = 600 (V)	Covered by main tested type
44 (Combine with mono cell 9, 10, 11, 22, 23)	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	SZ-247(front side, EVA) SV-15296P (rear side, EVA)	Thickness = 0.2mm - 0.7mm CTI = 600 (V)	Tested with PV modules
45 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Changzhou Betterial Film Technologies Co., Ltd.	B602M (EPE front side) B601HP (EVA rear side)	Thickness = 0.20mm - 0.8mm for both CTI = 600 (V)	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(S) See authenticated signature on first page (CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
46 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Betterial Film Technologies Co., Ltd. Type: B602M (front side) B601HP (rear side)	TWPET05 (front side) TWET05 (rear side)	Thickness = 0.20mm - 0.8mm for both CTI = 600 (V)	Tested with PV modules
47 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	3M China Limited Zhejiang Sinopont Technology Co., Ltd. Shanxi Sinopont Technology Co., Ltd	PO8110e (EPE front side) EVA9110T (EVA rear side)	Thickness = 0.20mm - 1mm for both CTI = 600 (V)	Tested with PV modules
48 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 3M China Limited Zhejiang Sinopont Technology Co., Ltd. Shanxi Sinopont Technology Co., Ltd Type: PO8110e (front side) EVA9110T (rear side)	TWPET04(front side) TWET04(rear side)	Thickness = 0.20mm - 1mm for both CTI = 600 (V)	Covered by main tested type
49(Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd. Type: TF4 (POE, front side) F406P (EVA, rear side)	TWPT01 (POE, front side) TWET01 (EVA, rear side)	Thickness = 0.35mm - 0.7mm for both PTI = 600 (V)	Covered by main tested type
50(Combine with mono cell 9, 10, 11, 22, 23)	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	CO-557 (front side, EPE) CO-556 (rear side, EPE)	Thickness = 0.2mm - 0.8mm CTI = 600 (V)	Tested with PV modules
51(Combine with mono cell 9, 10, 11, 22, 23)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	EP304DC (front side, EPE) EP304 (rear side, EPE)	Thickness = 0.2mm - 0.8mm CTI = 600 (V)	Tested with PV modules
52 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	EP304 (front side, EPE) F806W (rear side, EVA)	Thickness = 0.3mm - 0.7mm (EP304) CTI = 600 (V) Thickness = 0.3mm - 0.7mm (F806W) PTI = 600 (V)	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

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Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(S) (CERT engineer)

See authenticated
signature on first page

No.	Manufacturer	Type	Technical Data	Remark
53 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd. Type: EP304 (front side, EPE) F806W (rear side, EVA)	TWPET01 (front side) TWEW01 (rear side)	Thickness = 0.30 - 0.70 mm CTI = 600 (V)	Covered by main tested type
54 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	EP304 (front side, EPE) F806WH (rear side, EVA)	Thickness = 0.30 - 0.80 mm CTI = 600 (V)	Tested with PV modules
55 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd. Type: EP304 (front side, EPE) F806WH (rear side, EVA)	TWPET01 (front side, EPE) TWEB01 (rear side, EVA)	Thickness = 0.30 - 0.80 mm CTI = 600 (V)	Covered by main tested type
56 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd.	P507 (front side, EPE) S201W (rear side, EVA)	Thickness = 0.30 - 0.80 mm (P507) CTI = 600 (V) Thickness = 0.30 - 0.80 mm (S201W) PTI = 600 (V)	Tested with PV modules
57 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd. Type: P507 (front side, EPE) S201W (rear side, EVA)	TWPET02 (front side) TWEW02 (rear side)	Thickness = 0.30 - 0.80 mm CTI = 600 (V)	Covered by main tested type
58 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	CO-556 (front side, EPE) SV-15297B (rear side, EVA)	Thickness = 0.30 - 0.70 mm CTI = 600 (V)	Tested with PV modules
59 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd. Type: CO-556 (front side, EPE) SV-15297B (rear side, EVA)	TWPET03 (front side, EPE) TWEB03 (rear side, EVA)	Thickness = 0.30 - 0.70 mm CTI = 600 (V)	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(See authenticated signature on first page) CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
60 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	CO-556 (both side,EPE)	Thickness = 0.30 - 0.70 mm CTI = 600 (V)	Tested with PV modules
61 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd Type: CO-556 (both side,EPE)	TWPET03 (both side,EPE)	Thickness = 0.30 - 0.70 mm CTI = 600 (V)	Covered by main tested type
62 (Combine with mono cell 1, 2, 3, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	EP304 (both side,EPE)	Thickness = 0.20 - 0.90 mm CTI = 600 (V)	Tested with PV modules
63 (Combine with mono cell 1, 2, 3, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd. Type: EP304 both side, EPE)	TWPET01 (both side,EPE)	Thickness = 0.20 - 0.90 mm CTI = 600 (V)	Covered by main tested type
64(Combine with mono cell 9, 10, 11, 22, 23)	Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd.	P507C2 (front side, EPE) P507 (rear side, EPE)	Thickness = 0.2mm - 0.8mm CTI = 600 (V)	Tested with PV modules
65 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Changzhou Betterial Film Technologies Co., Ltd.	B602M (EPE, front side) B601RS (EVA, rear side)	Thickness = 0.20 - 0.80 mm CTI = 600 (V)	Tested with PV modules
66 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Betterial Film Technologies Co., Ltd. Type: B602M (EPE, front side) B601RS (EVA, rear side)	TWPET05 (EPE, front side) TWEB05 (EVA, rear side)	Thickness = 0.20 - 0.80 mm CTI = 600 (V)	Covered by main tested type
67 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Cybrid Technologies Inc.	Cybright T22H (EPE, front side) Cybright T11 (EVA, rear side)	Thickness = 0.20 - 0.80 mm CTI = 600 (V)	Tested with PV modules
68 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Cybrid Technologies Inc. Type: Cybright T22H (EPE, front side) Cybright T11 (EVA, rear side)	TWPET06 (EPE, front side) TWET06 (EVA, rear side)	Thickness = 0.20 - 0.80 mm CTI = 600 (V)	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(S) See authenticated signature on first page CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
69 (Combine with mono cell 9, 10, 11, 22, 23)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	EP304DC (EPE, front side) EP308 (EPE, rear side)	Thickness = 0.20 - 0.80 mm CTI = 600 (V)	Tested with PV modules
70 (Combine with mono cell 9, 10, 11, 22, 23)	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	CO-557 (EPE, both side)	Thickness = 0.20 - 0.90 mm CTI = 600 (V)	Tested with PV modules
69 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Changzhou Betterial Film Technologies Co., Ltd.	B602M (EPE, both side)	Thickness = 0.20 - 0.80 mm CTI = 600 (V)	Tested with PV modules
70 (Combine with mono cell 1, 2, 3, 12, 13, 14, 17, 18, 19, 20, 21)	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Changzhou Betterial Film Technologies Co., Ltd. Type: B602M (EPE, both side)	TWPET05 (EPE, both side)	Thickness = 0.20 - 0.80 mm CTI = 600 (V)	Tested with PV modules
Encapsulant film 1	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	CF15	Thickness=0.05-0.5mm CTI = 600 (V) between solar cell and linter-string connection	Tested with PV modules
Encapsulant film 2	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	SF-236	Thickness=0.05-0.5mm CTI = 600 (V) between solar cell and linter-string connection	Tested with PV modules
Encapsulant film 3	Shanghai HIUV New Materials Co., Ltd Chengdu HIUV New Material Technology Co., Ltd.	S201MT3	Thickness=0.05-0.5mm PTI = 600 (V) between solar cell and linter-string connection	Tested with PV modules
Encapsulant film 4	Changzhou Betterial Film Technologies Co., Ltd.	B601HP	Thickness=0.05-0.5mm CTI = 600 (V) between solar cell and linter-string connection	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S.  CERT engineer)

3.5 Frame

No.	Manufacturer	Type	Technical Data	Remark
Frame parts 1	Brand: Tongwei Solar (Hefei) Co. Ltd. Manufactured by: 1. JIANGYIN DEGAO NEW ENERGY TECHNOLOGY CO., LTD.	6005-T6	Material: Aluminum Thickness=35mm /33/30mm Color: silver or black	35mm tested, 30mm/35mm covered
Anti-dust frame parts 1	2. Anhui Guofei New Energy Technology Co., Ltd. 3. Anhui Guangyin Aluminum Co., LTD. 4. Hefei Runya New Energy Technology Co., Ltd 5. ANHUI XINBO Aluminum INDUSTRY SHARE Co., Ltd. Anhui Xinbo Technology Co., Ltd 6.Jiangsu Yuejia Metallic Technology Co., Ltd 7. Jiangsu LEAD Aluminum Industry Co., Ltd. 8. ANHUI FIRST ALUMINUM CO., LTD. 9. YongZhen Science and Technology (Changzhou) Co., Ltd. Yonz Technology Co., Ltd. Yonz Technology (Chuzhou) Co., Ltd. Yonz Technology (Wuhu) Co., Ltd. 10. Jiangsu Longji Aluminium Co., Ltd. 11. CITIC Bohai Aluminum Industries Holding Company Limited 12. Yingkou Changtai Aluminum Material Co., Ltd ChuZhou Ruida New Energy Materials Co., Ltd. 13. Chengdu YANGGUANG Aluminum Co.,Ltd. 14. Sichuan MingDi Aluminium Co., Ltd. Sichuan Mingdi New Energy Co., Ltd. 15. Guangdong Macmetal New Energy Technology Co., Ltd. 16. Jiangsu Hongyuanda Photovoltaic New Materials Co., Ltd. 17. HeNan Shengda Photovoltaic Technology Co.,Ltd. 18. Jiangyin Yurun Photovoltaic Materials Co., Ltd. 19. Huajia Aluminum Co., Ltd 20. Sichuan Chengfeng Aluminium Products Co, ltd 21. Jiangsu Kuna New Energy Co Ltd 22. Shandong Phoenix New Material Technology Co., Ltd. 23. Sichuan Nineteen Degrees Aluminum Industry Co., Ltd 24. Anhui Krant Aluminum Products Co., Ltd Xuancheng Krant New Materials Co., Ltd. 25.Changzhou Kaihong Aluminum Industry Co., LTD		Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S. See authenticated signature on first page CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
Frame parts 2	JIANGYIN DEGAO NEW ENERGY TECHNOLOGY CO., LTD.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm tested, 33mm/35mm covered
Anti-dust frame parts 2			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 3	Anhui Guofei New Energy Technology Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Anti-dust frame parts 3			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 4	Anhui Guangyin Aluminum Co., LTD	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Anti-dust frame parts 4			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 5	Hefei Runya New Energy Technology Co., Ltd	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Anti-dust frame parts 5			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 6	ANHUI XINBO Aluminum INDUSTRY SHARE Co., Ltd. Anhui Xinbo Technology Co., Ltd	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm tested, 33mm/35mm covered
Anti-dust frame parts 6			Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm tested, 33mm/35mm covered
Frame parts 7	Jiangsu Yuejia Metallic Technology Co., Ltd	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Anti-dust frame parts 7			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 8	Jiangsu LEAD Aluminum Industry Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Anti-dust frame parts 8			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 9	ANHUI FIRST ALUMINUM CO., LTD.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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(See authenticated signature on first page) CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
Anti-dust frame parts 9			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 10	YongZhen Science and Technology (Changzhou) Co., Ltd. Yonz Technology Co., Ltd. Yonz Technology (Chuzhou) Co., Ltd. Yonz Technology (Wuhu) Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm, 33mm tested, 35mm covered
Anti-dust frame parts 10			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 11	Jiangsu Longji Aluminium Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Anti-dust frame parts 11			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 12	CITIC Bohai Aluminum Industries Holding Company Limited	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm/35mm tested, 33mm covered
Anti-dust frame parts 12			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 13	Yingkou Changtai Aluminum Material Co., Ltd ChuZhou Ruida New Energy Materials Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm tested, 33mm/35mm covered
Anti-dust frame parts 13			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
14	Chengdu YANGGUANG Aluminum Co.,Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	35mm tested, 33mm/30mm covered
Anti-dust frame parts 14			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 15	Sichuan MingDi Aluminium Co., Ltd. Sichuan Mingdi New Energy Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	35mm tested, 33mm/30mm covered
Anti-dust frame parts 15			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 16	Guangdong Macmetal New Energy Technology Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	35mm tested, 33mm/33mm covered
Anti-dust frame parts 16			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(S) See authenticated signature on first page (CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
Frame parts 17	Jiangsu Hongyuanda Photovoltaic New Materials Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Anti-dust frame parts 17			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 18	HeNan Shengda Photovoltaic Technology Co.,Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Anti-dust frame parts 18			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 19	Jiangyin Yurun Photovoltaic Materials Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Anti-dust frame parts 19			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 20	Huajia Aluminum Co., Ltd	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	Tested with PV modules
Anti-dust frame parts 20			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 21	Sichuan Chengfeng Aluminium Products Co,ltd	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm tested, 33mm/35mm covered
Anti-dust frame parts 21			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 22	Jiangsu Kuna New Energy Co Ltd	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm tested, 33mm/35mm covered
Anti-dust frame parts 22			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 23	Shandong Phoenix New Material Technology Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm tested, 33mm/35mm covered
Anti-dust frame parts 23			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 24	Sichuan Nineteen Degrees Aluminum Industry Co., Ltd	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm tested, 33mm/35mm covered

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(See authenticated signature on first page) CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
Anti-dust frame parts 24			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 25	Anhui Krant Aluminum Products Co., Ltd Xuancheng Krant New Materials Co., Ltd.	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm/33mm tested, 35mm covered
Anti-dust frame parts 25			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Frame parts 26	Changzhou Kaihong Aluminum Industry Co., LTD	6005-T6	Material: Aluminum Thickness=35/33/30mm Color: silver or black	30mm/33mm tested, 35mm covered
Anti-dust frame parts 26			Material: Aluminum Thickness=35/33/30mm Color: silver or black	Covered by main tested type
Polymeric frame parts 1	Zhejiang DeYiLong Technology Co., Ltd.	Composite material frame	TI=146.5°C Flammability: V-1 Thickness=30mm/35mm/33mm Color: black or others	30mm tested, 35mm/33mm covered
Polymeric frame parts 2	Jiangsu Worldlight New Material Co., LTD	Composite material frame	TI= 90°C Flammability: V-1 Thickness=30mm/35mm/33mm Color: black or others	30mm/35mm tested, 33mm covered
Polymeric frame parts 3	Zhenshi Group Huamei New Materials Co., Ltd.	Composite material frame	TI= 90°C Flammability: V-1 Thickness=30mm/35mm/33mm Color: black or others	30mm/33mm tested, 35mm covered
Polymeric frame parts 4	Brand: Tongwei Solar (Hefei) Co. Ltd. Manufactured by: 1.Zhejiang DeYiLong Technology Co., Ltd.	Composite material frame	TI=146.5°C Flammability: V-1 Thickness=30mm/35mm/33mm Color: black or others	Covered by main tested type
	Brand: Tongwei Solar (Hefei) Co. Ltd. Manufactured by: 2.Jiangsu Worldlight New Material Co., LTD		TI= 90°C Flammability: V-1 Thickness=30mm/35mm/33mm Color: black or others	Covered by main tested type
	Brand: Tongwei Solar (Hefei) Co. Ltd. Manufactured by: 3.Zhenshi Group Huamei New Materials Co., Ltd.		TI= 90°C Flammability: V-1 Thickness=30mm/35mm/33mm Color: black or others	Covered by main tested type
Steel frame 1	Brand: Tongwei Solar (Hefei) Co. Ltd. Manufactured by: BACKBONE Material (CHANGSHU) CO., LTD	Hot-dip galvanized aluminum magnesium steel	Coating thickness $\geq 20 \mu m$ Total thickness=30mm/33mm/35mm Color: silver or others	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S. See authenticated signature on first page CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
	Brand: Tongwei Solar (Hefei) Co. Ltd. Manufactured by: Anhui Caesar New Energy Technology Co.,Ltd	Zinc aluminum magnesium coated steel	Coating thickness $\geq 17 \mu m$ Total thickness=30mm/33mm/35mm Color: silver or others	Covered by main tested type
Steel frame 2	BACKBONE Material (CHANGSHU) CO., LTD	Hot-dip galvanized aluminum magnesium steel	Coating thickness $\geq 20 \mu m$ Total thickness=30mm/33mm/35mm Color: silver or others	30mm tested, 33mm/35mm covered
Steel frame 3	Anhui Caesar New Energy Technology Co.,Ltd	Zinc aluminum magnesium coated steel	Coating thickness $\geq 17 \mu m$ Total thickness=30mm/33mm/35mm Color: silver or others	30mm tested, 33mm/35mm covered

3.6 Frame adhesive

No.	Manufacturer	Type	Technical Data	Remark
1	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	Rated V-0 at min. 3.0 mm thick, RTI=105, CTI=0 Color: white or black	Tested with PV modules UL (E248611)
2	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	Rated V-0 at min. 3.0 mm thick, RTI=105 Silicone Color: white or black	Tested with PV modules UL (E335227)
3	Chengdu Guibao Science & Technology Co., Ltd. Chengdu Guibao New Material Co., Ltd	888A	Rated HB at min. 1.0 mm thick, RTI=105, CTI=0 Silicone Color: white or black	Tested with PV modules
4	Jiangsu Crevo Science & Technology Co., Ltd.	CV709	Rated HB at min. 0.5 mm thick, RTI=105, CTI=0 Silicone Color: white or black	Tested with PV modules UL (E339949)
5	Jiangsu Tianchen New Material Co., Ltd.	HT-8258	Rated HB at min. 2.0 mm thick, RTI=105, CTI=0 Silicone Color: white or black	Tested with PV modules UL (E344820)
6	Suzhou Tonsan Adhesive Co., Ltd. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	Rated HB at min. 0.5 mm thick, RTI=105, CTI=0 Silicone Color: white or black	Tested with PV modules UL (E253998)
7	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	9661	Rated HB at min. 0.4 mm thick, RTI=105 Silicone Color: white or black	Tested with PV modules UL (E248611)
8	Shanghai Huitian New Material Co.,Ltd. Hubei Huitian New Materials Co., Ltd.	5166	Rated HB at min. 3.0 mm thick, RTI=50 Silicone Color: white or black	Tested with PV modules UL (E248611)

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S) See authenticated signature on first page (CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
9	Cybrid Technologies Inc.	SW-4G	Rated HB at min. 3.0 mm thick, RTI=50 Silicone Color: white or black	Tested with PV modules UL (E543595)
10	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606CHUN	Rated HB at min. 3.0 mm thick, RTI=105 Silicone Color: white or black	Tested with PV modules UL (E2335227)
11	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	ZJ-607	Silicone Color: white or black	Tested with PV modules
11	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	4061	Rated HB at min. 3.0 mm thick, RTI=105 Silicone Color: white or black	Tested with PV modules

3.7 Internal wiring (cell-to-cell connection)

No.	Manufacturer	Type	Technical Data	Remark
1	Brand: Tongwei Solar (Hefei) Co., Ltd Manufactured by: 1.Changzhou Greateen New Energy Technology Co., Ltd Greateen New Energy Technology (Yancheng) Co., Ltd. Greateen New Energy Technology (Chengdu) Co., Ltd. 2. Suzhou YourBest New-type Materials Co., Ltd. 3. Jiangsu Sun Technology Corp., Ltd. 4. TonyShare (Suzhou) Electronic Material Technology Co., Ltd. 5. Xi'an Telison New Materials Co., Ltd. 6.NANTONG DEJINCHANG PHOTOELECTRIC TECHNOLOGY CO., LTD 7.Yancheng State-Owned New Material Co.,Ltd.	Round wire ribbon with tin plated	$\Phi = 0.32\text{mm}$ (0.30,0.31,0.33,0.34 cover by main type) $\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) $\Phi = 0.22\text{mm}$ (0.20,0.21,0.23,0.24 cover by main type) $\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) & $\Phi = 0.24\text{mm}$ (0.22,0.23,0.25,0.26 cover by main type) Sn60%Pb40% Color: silver	Covered by main tested type
			$\Phi = 0.28\text{mm}$ (0.26,0.27,0.29,0.30 cover by main type) Sn42%Pb57%Ag1% Color: silver	Covered by main tested type
			$\Phi = 0.24\text{mm}$ (0.22,0.23,0.25,0.26 cover by main type) Sn37%Pb42%Bi21% Color: silver	Covered by main tested type
			Dimensions = $0.6 \pm 10\% \times 0.25 \pm 10\%$ mm Sn63%Pb37% Color: silver	Covered by main tested type

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S. See authenticated signature on first page CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
			$\Phi = 0.28\text{mm}$ (0.26,0.27,0.29,0.30 cover by main type) $\Phi = 0.24\text{mm}$ (0.22,0.23,0.25,0.26 cover by main type) $\Phi = 0.20\text{mm}$ (0.18,0.19,0.21 cover by main type) $\Phi = 0.23\text{mm}$ (0.22,0.24 cover by main type) $\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) $\Phi = 0.23\text{mm}$ (0.22,0.24 cover by main type) & $\Phi = 0.20\text{mm}$ (0.18,0.19,0.21 cover by main type) Dimensions = $0.6 \pm 10\% \times 0.25 \pm 10\% \text{mm}$ Sn43%Pb43%Bi14% Color: silver	Covered by main tested type
2	Changzhou Greateen New Energy Technology Co., Ltd. Greateen New Energy Technology (Yancheng) Co., Ltd. Greateen New Energy Technology (Chengdu) Co., Ltd.	Round wire ribbon with tin plated	$\Phi = 0.32\text{mm}$ (0.30,0.31,0.33,0.34 cover by main type) $\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) Sn60%Pb40% Color: silver	Tested with PV modules
3	Suzhou YourBest New-type Materials Co., Ltd.	Round wire ribbon with tin plated	$\Phi = 0.32\text{mm}$ (0.30,0.31,0.33,0.34 cover by main type) $\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) $\Phi = 0.22\text{mm}$ (0.20,0.21,0.23,0.24 cover by main type) Sn60%Pb40% Color: silver	Tested with PV modules
			$\Phi = 0.28\text{mm}$ (0.26,0.27,0.29,0.30 cover by main type) Sn42%Pb57%Ag1% Color: silver	Tested with PV modules
			$\Phi = 0.28\text{mm}$ (0.26,0.27,0.29,0.30 cover by main type) $\Phi = 0.24\text{mm}$ (0.22,0.23,0.25,0.26 cover by main type) $\Phi = 0.20\text{mm}$ (0.18,0.19,0.21 cover by main type) $\Phi = 0.23\text{mm}$ (0.22,0.24 cover by main type) & $\Phi = 0.20\text{mm}$ (0.18,0.19,0.21 cover by main type) Sn43%Pb43%Bi14% Color: silver	Tested with PV modules
			$\Phi = 0.24\text{mm}$ (0.22,0.23,0.25,0.26 cover by main type) Sn37%Pb42%Bi21% Color: silver	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(See authenticated signature on first page) CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
4	Jiangsu Sun Technology Corp., Ltd.	Round wire ribbon with tin plated	$\Phi = 0.32\text{mm}$ (0.30,0.31,0.33,0.34 cover by main type) $\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) Sn60%Pb40% Color: silver	Tested with PV modules
5	TonyShare (Suzhou) Electronic Material Technology Co., Ltd.	Round wire ribbon with tin plated	$\Phi = 0.32\text{mm}$ (0.30,0.31,0.33,0.34 cover by main type) $\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) $\Phi = 0.22\text{mm}$ (0.20,0.21,0.23,0.24 cover by main type) Sn60%Pb40% Color: silver	Tested with PV modules
			$\Phi = 0.23\text{mm}$ (0.22,0.24 cover by main type) $\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) $\Phi = 0.23\text{mm}$ (0.22,0.24 cover by main type) & $\Phi = 0.20\text{mm}$ (0.18,0.19,0.21 cover by main type) Dimensions = $0.6 \pm 10\% \times 0.25 \pm 10\% \text{mm}$ Sn43%Pb43%Bi14% Color: silver	Tested with PV modules
			Dimensions = $0.6 \pm 10\% \times 0.25 \pm 10\% \text{mm}$ Sn63%Pb37% Color: silver	Tested with PV modules
6	Xi'an Telison New Materials Co., Ltd.	Round wire ribbon with tin plated	$\Phi = 0.32\text{mm}$ (0.30,0.31,0.33,0.34 cover by main type) $\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) $\Phi = 0.22\text{mm}$ (0.20,0.21,0.23,0.24 cover by main type) Sn60%Pb40% Color: silver	Tested with PV modules
			$\Phi = 0.28\text{mm}$ (0.26,0.27,0.29,0.30 cover by main type) Sn42%Pb57%Ag1% Color: silver	Tested with PV modules
7	NANTONG DEJINCHANG PHOTOELECTRIC TECHNOLOGY CO., LTD	Round wire ribbon with tin plated	$\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) $\Phi = 0.26\text{mm}$ (0.24,0.25,0.27,0.28 cover by main type) & $\Phi = 0.24\text{mm}$ (0.22,0.23,0.25,0.26 cover by main type) Sn60%Pb40% Color: silver	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(See authenticated signature on first page) (CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
8	Yancheng State-Owned New Material Co., Ltd.	Round wire ribbon with tin plated	Φ = 0.26mm (0.24,0.25,0.27,0.28 cover by main type) Φ = 0.26mm (0.24,0.25,0.27,0.28 cover by main type) & Φ = 0.24mm (0.22,0.23,0.25 ,0.26cover by main type) Sn60%Pb40% Color: silver	Tested with PV modules
9	Shanghai Delangju New Material Co., Ltd.	SE6002	Transparent hot-melt adhesive	Tested with PV modules
10	Shanghai Delangju New Material Co., Ltd.	UV9602	UV adhesive	Tested with PV modules
11	Shenzhen Earlsun Technology Co., Ltd.	GZ-2330	Transparent hot-melt adhesive	Tested with PV modules
12	Darbond Technology Co., Ltd.	6309U	Transparent hot-melt adhesive	Tested with PV modules
13	Heyu Technology Co.,Ltd	HY-GD350TS	Transparent hot-melt adhesive	Tested with PV modules
14	GRINM NEXUSX ADVANCED MATERIALS (BEIJING) CO., LTD.	XG-C-01	Soldering material	Tested with PV modules
15	Shenzhen Vital New Material Company Limited Suzhou Vital Electronics Material Technology Co., Ltd.	XG-A-01	Soldering material	Tested with PV modules
16	Coolen (Guangdong) Technology Co., Ltd	GJ-I-01	UV adhesive	Tested with PV modules
17	Heyu Technology Co.,Ltd	GJ-D-03	UV adhesive	Tested with PV modules
18	XIAMEN HOWER MATERIAL CO., LTD	JS-H-35	Insulation adhesive	Tested with PV modules
19	Shenzhen Rongda Photosensitive and Technology Co., Ltd	JS-F-28	Insulation adhesive	Tested with PV modules
20	Heyu Technology Co.,Ltd	HY-GD300	UV adhesive	Tested with PV modules
21	Guangdong SunRui New Material Co., Ltd.	XJ22-C	UV adhesive	Tested with PV modules
22	Kemibond Advanced Materials (Tian Jin) Co., Ltd.	UV356	UV adhesive	Tested with PV modules
23	Yantai Darbond Technology Co., Ltd.	4354	UV adhesive	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

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Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(S. See authenticated signature on first page CERT engineer)

3.8 Internal wiring (inter-string connection)

No.	Manufacturer	Type	Technical Data	Remark
1	Brand: Tongwei Solar (Hefei) Co., Ltd Manufactured by: 1.Changzhou Greateen New Energy Technology Co., Ltd Greateen New Energy Technology (Yancheng) Co., Ltd. Greateen New Energy Technology (Chengdu) Co., Ltd. 2. Suzhou YourBest New-type Materials Co., Ltd. 3. Jiangsu Sun Technology Corp., Ltd. 4. TonyShare (Suzhou) Electronic Material Technology Co., Ltd. 5. Xi'an Telison New Materials Co., Ltd. 6.NANTONG DEJINCHANG PHOTOELECTRIC TECHNOLOGY CO., LTD 7.Yancheng State-Owned New Material Co.,Ltd.	Copper belt with tin plated	0.32±10% x 4.0±10% mm 0.30 x 4.0mm 0.32±10% x 7.0±10% mm 0.30 x 7.0 mm Sn60%Pb40% Color: black	Covered by main tested type
			0.32±10% x 4.0±10% mm 0.30±10% x 4.0±10%mm 0.32±10% x 7.0±10% mm 0.30±10% x 7.0 ±10%mm 0.25±10% x 7.0±10% mm Sn60%Pb40% Color: silver	Covered by main tested type
		Copper belt with tin plated (reflective)	0.32±10% x 4.0±10% mm 0.32±10% x 7.0±10% mm 0.30±10% x 4.0±10%mm 0.30±10% x 7.0±10% mm 0.35±10% x 4.0±10% mm, 0.35±10% x 7.0±10% mm 0.40±10% x 4.3±10% mm 0.40±10% x 5.0±10% mm 0.40±10% x 5.3±10% mm 0.15±10% x 8.0±10% mm 0.15±10% x 5.5±10% mm 0.15±10% x 6.0±10% mm 0.10±10% x 6.0±10% mm 0.12±10% x 5.0±10% mm 0.18±10% x 5.0±10% mm 0.20±10% x 8.0±10% mm Sn60%Pb40% Color: silver	Covered by main tested type
			0.32±10% x 4.0±10% mm, 0.30±10% x 4.0±10%mm 0.35±10% x 4.0±10% mm 0.32±10% x 7.0±10% mm 0.30±10% x 7.0±10% mm 0.35±10% x 7.0±10% mm 0.40±10% x 4.3±10% mm Sn63%Pb37% Color: silver	Covered by main tested type
2	Jiangsu Sun Technology Corp., Ltd.	Copper belt with tin plated	0.32±10% x 4.0±10% mm 0.30 x 4.0mm 0.32±10% x 7.0±10% mm 0.30 x 7.0 mm 0.25±10% x 7.0±10% mm Sn60%Pb40% Color: silver	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

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No.	Manufacturer	Type	Technical Data	Remark
		Copper belt with tin plated(reflective)	0.32±10% x 4.0±10% mm 0.30±10% x 4.0±10%mm 0.40±10% x 4.3±10% mm 0.32±10% x 7.0±10% mm 0.30 x 7.0 mm 0.40±10% x 5.3±10% mm Sn60%Pb40% Color: silver	Tested with PV modules
3	Xi'an Telison New Materials Co., Ltd.	Copper belt with tin plated	0.32±10% x 4.0±10% mm 0.30 x 4.0mm 0.32±10% x 7.0±10% mm 0.30 x 7.0 mm Sn60%Pb40% Color: silver	Tested with PV modules
		Copper belt with tin plated (reflective)	0.32±10% x 4.0±10% mm 0.30 x 4.0mm 0.32±10% x 7.0±10% mm 0.30 x 7.0 mm 0.40±10% x 4.3±10% mm Sn60%Pb40% Color: silver	Tested with PV modules
4	Suzhou YourBest New-type Materials Co., Ltd.	Copper belt with tin plated	0.32±10% x 4.0±10% mm 0.30 x 4.0mm 0.32±10% x 7.0±10% mm 0.30 x 7.0 mm 0.25±10% x 7.0±10% mm Sn60%Pb40% Color: silver	Tested with PV modules
			0.32±10% x 4.0±10% mm 0.32±10% x 7.0±10% mm Sn60%Pb40% Color: black	Tested with PV modules
		Copper belt with tin plated (reflective)	0.32±10% x 4.0±10% mm 0.30±10% x 4.0±10% mm 0.32±10% x 7.0±10% mm 0.30 x 7.0 mm 0.40±10% x 4.3±10% mm 0.15±10% x 8.0±10% mm 0.35±10% x 4.0±10% mm 0.15±10% x 5.5±10% mm 0.15±10% x 6.0±10% mm 0.40±10% x 5.3±10% mm 0.12±10% x 5.0±10% mm 0.18±10% x 5.0±10% mm 0.20±10% x 8.0±10% mm Sn60%Pb40% Color: silver	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

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No.	Manufacturer	Type	Technical Data	Remark
5	TonyShare (Suzhou) Electronic Material Technology Co., Ltd.	Copper belt with tin plated	0.32±10% x 4.0±10% mm 0.30 x 4.0mm 0.32±10% x 7.0±10% mm 0.30 x 7.0 mm Sn60%Pb40% Color: silver/black	Tested with PV modules
		Copper belt with tin plated (reflective)	0.32±10% x 4.0±10% mm 0.30±10% x 4.0±10%mm 0.35±10% x 4.0±10%mm 0.32±10% x 7.0±10% mm 0.30±10% x 7.0 ±10%mm 0.35±10% x 7.0 ±10%mm (cover by main type) 0.40±10% x 5.0±10% mm 0.15±10% x 8.0±10% mm 0.15±10% x 5.5±10% mm 0.15±10% x 6.0±10% mm 0.10±10% x 6.0±10% mm 0.12±10% x 5.0±10% mm 0.18±10% x 5.0±10% mm 0.20±10% x 8.0±10% mm Sn60%Pb40% Color: silver	Tested with PV modules
			0.32±10% x 4.0±10% mm 0.30±10% x 4.0mm ±10% 0.35±10% x 4.0mm ±10% (cover by main type) 0.32±10% x 7.0±10% mm 0.30±10% x 7.0 ±10%mm 0.35±10% x 7.0 ±10%mm (cover by main type) Sn63%Pb37% Color: silver	Tested with PV modules
6	Changzhou Greateen New Energy Technology Co., Ltd. Greateen New Energy Technology (Yancheng) Co., Ltd. Greateen New Energy Technology (Chengdu) Co., Ltd.	Copper belt with tin plated	0.32±10% x 4.0±10% mm 0.30 x 4.0mm 0.32±10% x 7.0±10% mm 0.30 x 7.0 mm Sn60%Pb40% Color: silver/black	Tested with PV modules
		Copper belt with tin plated (reflective)	0.32±10% x 4.0±10% mm 0.30±10% x 4.0±10%mm 0.32±10% x 7.0±10% mm 0.30 x 7.0 mm 0.40±10% x 4.3±10% mm 0.40±10% x 5.3±10% mm Sn60%Pb40% Color: silver	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(See authenticated signature on first page) (CERT engineer)

No.	Manufacturer	Type	Technical Data	Remark
7	NANTONG DEJINCHANG PHOTOELECTRIC TECHNOLOGY CO., LTD	Copper belt with tin plated(reflective)	0.30±10% x 4.0±10% mm 0.30±10% x 7.0±10% mm Sn60%Pb40% Color: silver	Tested with PV modules
8	Yancheng State-Owned New Material Co.,Ltd.	Copper belt with tin plated(reflective)	0.30±10% x 4.0±10% mm 0.30±10% x 7.0±10% mm Sn60%Pb40% Color: silver	Tested with PV modules

3.9 Junction box set

Object	Manufacturer	Type	Technical Data	Remark
Junction box set 1				
Junction box	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: Zhejiang Zhonghuan Sunter PV Technology Co., Ltd. QC Solar (Suzhou) Corporation Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd. Zhejiang Minghe New Energy Technology Co., Ltd. Jiangsu Tonglin Electric Co., Ltd. Zhejiang Renhe Photovoltaic Technology Co., Ltd. Shidi Photovoltaic Technology (Taizhou) Co., Ltd.	TW-PVJB01-ab TW-PVJB01-qb-ab	Rated Voltage = 1500VDC Rated current = 25A or 30A or 35A Reverse current = 40A Number of diodes: 3	Certificate no. B 090075 0017
Adhesive (junction box)	H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1527	-	-
	Beijing TONSAN New Material Technology Co., Ltd			
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Goloho Chemical Industry Ltd.	GOLOHO-63	-	-
	Jiangsu Tianchen New Material Co., Ltd.	TS-688	-	-
	Jiangsu Tianshun New Material Technology Co., Ltd.	TS6568	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	-	-
	Sika (Jiangsu) Industrial Material Ltd.	CV709	-	-
	Sika (Jiangsu) Industrial Material Ltd.	CREVO709	-	-
	Sika India Pvt. Ltd.	Sika AS 60 CN	-	-
	DOW CORNING	PV804	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-8258	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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signature on first page

Object	Manufacturer	Type	Technical Data	Remark
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SMG533	-	-
	CHENGDU GUIBAO SCIENCE & TECHNOLOGY CO., LTD. Chengdu Guibao New Material Co., Ltd	888A	-	-
	Suzhou Datong Advanced Material Co., Ltd.	TT600	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	9661	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd. Beijing TONSAN New Material Technology Co., Ltd	1533 1521	-	-
	Sika (Jiangsu) Industrial Material Ltd.	CV315	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
	DOW Corning Corporation	PV-7326	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-6360A/B	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SKF323	-	-
	Suzhou Datong Advanced Material Co., Ltd.	TT700J	-	-
	CHENGDU GUIBAO SCIENCE & TECHNOLOGY CO., LTD Chengdu Guibao New Material Co., Ltd	4808	-	-
Bypass diodes	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 1. Zhejiang Zhonghuan Sunter PV Technology Co., Ltd. 2. Panjit Electronics (Wuxi) Co., Ltd. 3. Yangzhou Yangjie Electronic Technology Co., Ltd. 4. Jinan Jin Heng Electronics Co., Ltd. 5. Changzhou Star Sea Electronics Co., Ltd. 6. Hangzhou Daoming Microelectronics Co., Ltd. 7. Yangzhou HY Technology development Co., Ltd. 8. Anhui Juxin Semiconductor Technology Co., Ltd 9. Jilin Sino-Microelectronics Co., Ltd. 10. Nan Tong Hornby Electronic Co., LTD 11. Jiangsu Tonglin Electric Co., Ltd.	35SQ045	Tj max = 200°C If = 35A	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S) See authenticated signature on first page (CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 1. Zhejiang Zhonghuan Sunter PV Technology Co., Ltd. 2. Panjit Electronics (Wuxi) Co., Ltd. 3. Yangzhou Yangjie Electronic Technology Co., Ltd. 4. Jinan Jin Heng Electronics Co., Ltd. 5. Changzhou Star Sea Electronics Co., Ltd. 6. Hangzhou Daoming Microelectronics Co., Ltd. 7. Yangzhou HY Technology development Co., Ltd. 8. Anhui Juxin Semiconductor Technology Co., Ltd 9. Nan Tong Hornby Electronic Co., LTD. 10. Jiangsu Tonglin Electric Co., Ltd.	40SQ045	Tj max = 200°C If = 40A	-
	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 1. Zhejiang Zhonghuan Sunter PV Technology Co., Ltd. 2. Hangzhou Daoming Microelectronics Co., Ltd. 3. Anhui Juxin Semiconductor Technology Co., Ltd	35MK045	Tj max = 200°C If = 45A	-
	Brand: Tongwei Solar (Hefei) Co., Ltd. Manufactured by: 1. Zhejiang Zhonghuan Sunter PV Technology Co., Ltd. 2. Hangzhou Daoming Microelectronics Co., Ltd. 3. Anhui Juxin Semiconductor Technology Co., Ltd	40MK045	Tj max = 200°C If = 45A	-
Cable	Tongwei Solar (Hefei) Co., Ltd.	62930 IEC 131 1x4.0mm²& H1Z2Z2-K 1 x4.0mm²	Rated Voltage = 1500VDC	Certificate no.: B 090075 0021 Rev.02
	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	62930 IEC 131 1x4.0mm²	Rated Voltage = 1500VDC	Certificate no.: R 50436635
Connectors	Tongwei Solar (Hefei) Co., Ltd.	TW-PVCON-01	Rated current = 40A	Certificate no.: B 090075 0018
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated current = 45A (4.0mm²)	Certificate no.: R 60127169
		PV-KST4-EVO2A/xy PV-KBT4-EVO2A/xy	Rated voltage = 1500VDC Rated current = 45A	Certificate no.: R 60127169
Junction box set 2				

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

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PVP-F 025 CDF_module_01215&61730

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S)

See authenticated
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(CERT engineer)

Version 1.1

Object	Manufacturer	Type	Technical Data	Remark
Junction box	SUZHOU UKT NEW ENERGY TECHNOLOGY CO., LTD	JB12x (x=S1)	Rated Voltage = 1500VDC Rated Current = 30A Number of diodes: 3	Certificate no.: R 50377301
Adhesive (junction box)	Suzhou TONSAN Adhesive Ltd. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Chemical Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT8258	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	-	-
	GUANGZHOU BAIYUN CHEMICAL INDUSTRY CO., LTD.	SMG533	-	-
Potting material	Jiangsu Tianchen New Material Co., Ltd.	HT6360	-	-
	Goloho Chemical Industrial Ltd.	GOLOHO-313-AB	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
	Beijing Tonsan New Material Technology Co., Ltd. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521	-	-
	GUANGZHOU BAIYUN CHEMICAL INDUSTRY CO., LTD.	SKF323	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	Suzhou TONSAN Adhesive Ltd. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1533	-	-
Bypass diodes	SUZHOU UKT NEW ENERGY TECHNOLOGY CO., LTD	UKTH5045-12/ TM3045-30	Tj max = 200°C	-
Cable	Ningbo Kibor Wire & Cable Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50302047
	Wuxi Xinhongye Wire & Cable Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC (1x4.0mm ²)	Certificate no.: R 50311889
	Trina Solar Co., Ltd.	62930 IEC 131 1X4.0mm ² HALOGEN FREE LOW SMOKE	Rated Voltage = 1500VDC	Certificate no.: R 50451199
	Trina Solar Co., Ltd.	H1Z2Z2-K 1X4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50426462
	Changshu JHOSIN Communication Technology Co., Ltd.	62930 IEC 131 1X4.0mm ² HALOGEN FREE LOW SMOKE	Rated Voltage = 1500VDC	Certificate no.: R 50413335

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(See authenticated signature on first page) (CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
Connectors	SUZHOU UKT NEW ENERGY TECHNOLOGY CO., LTD	PV-CO02-xy	Rated Voltage = 1500VDC Rated Current = 45A	Certificate no.: R 50390097
	Jiangxi Jinko PV Material Co., Ltd.	PV-JK03M-2	Rated Voltage = 1500VDC Rated Current = 30A	Certificate no.: R 50318165
	Staubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR PV-KBT4-EVO 2/xy_UR	Rated Voltage = 1500VDC Rated Current = 45A	Certificate no.: R 60127169
	Stäubli Electrical Connectors AG	PV-KST4-EVO2A/xy PV-KBT4-EVO2A/xy	Rated voltage = 1500VDC Rated current = 45A	Certificate no.: R 60127169
	Trina Solar Co., Ltd.	TS4-xz (z=2)	Rated Voltage = 1500VDC Rated Current = 41A	Certificate no.: R 50385924
	Trina Solar Co., Ltd.	TS4	Rated Voltage = 1500VDC Rated Current = 41A	Certificate no.: R 50401767
Junction box set 3				
Junction box	QC Solar (Suzhou) Corporation	3Qxy (x=3, 4, 5, y=1, 2, 3, 4)	Rated Voltage = 1500VDC Rated Current = 25A or 30A or 35A Number of diodes: 3	Certificate no.: R 50510013
Adhesive (junction box)	Suzhou TONSAN Adhesive Ltd. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	-	-
	Jiangsu Tianchen New Materials Co., Ltd.	HT-8258	-	-
	Jiangsu Minghao New Materials Technology Co., Ltd.	MH-3668	-	-
Potting material	Suzhou TONSAN Adhesive Ltd. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521	-	-
	Suzhou TONSAN Adhesive Ltd. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1533	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	Jiangsu Tianchen New Materials Co., Ltd.	HT-6360	-	-
	Jiangsu Minghao New Materials Technology Co., Ltd.	MH-3667	-	-
QC Solar (Suzhou) Corporation	QC Solar (Suzhou) Corporation	QCMK5045B	Tj max = 200°C	-
	QC Solar (Suzhou) Corporation	QCM4045	Tj max = 200°C	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(See authenticated signature on first page) CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
	QC Solar (Suzhou) Corporation	QCMK5045	Tj max = 200°C	-
	QC Solar (Suzhou) Corporation	30SQ050A	Tj max = 200°C	-
	QC Solar (Suzhou) Corporation	40SQ045	Tj max = 200°C	-
	QC Solar (Suzhou) Corporation	QCMK6045	Tj max = 200°C	-
Cable	QC Solar (Suzhou) Corporation	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50348871
	QC Solar (Suzhou) Corporation	62930 IEC 131 1x4.0 / 6.0mm ² HALOGEN FREE LOW SMOKE	Rated Voltage = 1500VDC	Certificate no.: R 50447239
Connectors	QC Solar (Suzhou) Corporation	QC4.10-cds (c=3 or 4; d=4 or 5 or 6 or 7 or 8; s=blank or 1)	Rated Voltage = 1500VDC Rated Current = 41A	Certificate no.: R 50505605
	Staubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR (male)	Rated Voltage = 1500VDC Rated Current = 45A	Certificate no.: R 60127169
		PV-KBT4-EVO 2/xy_UR (female)	Rated Voltage = 1500VDC Rated Current = 45A	Certificate no.: R 60127169
	Amphenol Technology (Shenzhen) Co., Ltd.	UTXCFabcde; UTXCMabcde (a=A, b=4, c=A to Z, e=Blank or A or Z)	Rated Voltage = 1500VDC Rated Current = 35A	Certificate no.: R 50340393
	Tyco Electronics Austria GmbH	PV4-S1yx	Rated Voltage = 1500VDC Rated Current = 40A	Certificate no.: R 60148776
Junction box set 4				
Junction box	Jiangxi Jinko PV Material Co., Ltd.	PV-JK09Lxy (x=2, y=2)	Rated Voltage = 1500VDC Rated Current = 30A Number of diodes: 3	Certificate no.: R 50354415
Adhesive (junction box)	Jiangsu Tianchen New Materials Co., Ltd	HT-8258	-	-
	JIANGSU MINGHAO NEW MATERIAL SCI- TECH CORPORATION	MH-3668	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	Jiangsu Tianchen New Materials Co., Ltd	HT-6360A / HT- 6360B	-	-
	JIANGSU MINGHAO NEW MATERIAL SCI- TECH CORPORATION	MH-3667	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT5299W-S (black)	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(S. See authenticated signature on first page CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
	TONSAN ADHESIVE INC H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
Bypass diodes	Jiangxi Jinko PV Material Co., Ltd.	TPA6050-T	Tj max=200℃	-
Cable	Ningbo Kibor Wire&Cable Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50302047
	Jiangxi Jinko PV Material Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50319823
	Jiangxi Jinko PV Material Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50334783
	Jiangxi Jinko PV Material Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50347607
	Jiangxi Hejia Technology Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50346833
	YushanXinzhan Industrial Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50345549
	Jiangxi Jinko PV Material Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50367004
	DONGGUAN XINBEISEN WIRE AND CABLE CO LTD	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50355846
	Jiangxi Jinko PV Material Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50380780
	Suzhou Baohing Electric Wire & Cable Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50310426
	Jiangxi Jinko PV Material Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50380522
	Jiangxi Han Guang Cable Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50390363
	Jiangxi Jinko PV Material Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Max. Voltage=1500V	Certificate no. R 50393550
	Jiangxi Hejia Technology Co., Ltd.	H1Z2Z2-K 1x6.0...25mm ²	Max. Voltage=1500V 1x6mm ²	Certificate no. R 50346833
	Suzhou Baohing Electric Wire&Cable Co., Ltd.	62930 IEC 131 1x1.5...35mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50464210
	Ningbo Kibor Wire&Cable Co., Ltd.	62930 IEC 131 1x1.5...10mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50413678
	Wuxi Xinhongye Wire & Cable Co., Ltd	H1Z2Z2-K 1x1.5...35mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50311889
	Wuxi Xinhongye Wire & Cable Co., Ltd	62930 IEC 131 1x1.5...35mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50439595

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Object	Manufacturer	Type	Technical Data	Remark
	Jiangxi Jinko PV Material Co., Ltd.	H1Z2Z2-K 1x2.5...35mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50463891
	SUZHOU YONGHAO CABLE CO., LTD.	H1Z2Z2-K 1x2.5...35mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50379270
	SUZHOU YONGHAO CABLE CO., LTD.	62930 IEC 131 1x2.5...35mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50401233
	RUIXU INDUSTRY CO., LTD.	H1Z2Z2-K 1x2.5...10mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50479665
	RUIXU INDUSTRY CO., LTD.	62930 IEC 131 1x2.5...10mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50467836
	Jiangxi Jinko PV Materials Co., Ltd.	H1Z2Z2-K 1x2.5...10mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50479666
	Jiangxi Jinko PV Materials Co., Ltd.	62930 IEC 131 1x2.5...10mm ²	Max. Voltage=1500V 1x4mm ² , 1x6mm ²	Certificate no. R 50479664
Connectors	Staubli Electrical Connectors AG	PV-KST4- EVO2/xy_UR; (male) PV-KBT4- EVO2/xy_UR (female)	Rated Voltage=1500V Rated Current=45A for 4mm ²	Certificate no. R 60127169
	Jiangxi Jinko PV Material Co., Ltd.	PV-JK03M/xy (Plug+Socket)(x=2,y =B)	Rated Voltage=1500V Rated Current=45A for 4mm ²	Certificate no. R 50318165
	Jiangxi Jinko PV Material Co., Ltd.	PV-JK03M1/xy (Plug+Socket)(x=2,y =B)	Rated Voltage=1500V Rated Current=45A for 4mm ²	Certificate no. R 50318165
	Jiangxi Jinko PV Material Co., Ltd.	PV-JK03M2/xy (Plug+Socket)(x=2,y =B)	Rated Voltage=1500V Rated Current=45A for 4mm ²	Certificate no. R 50318165
Junction box set 5				
Junction box	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	JM37xy (x=A, y=A or B or C)	Rated Voltage = 1500VDC Rated Current = 20A or 25A or 30A Number of diodes: 3	Certificate no.: R 50541405
Adhesive (junction box)	Beijing Tonsan New Material Technology Co., Ltd. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Momentive	TSE382-(W/B/C)	-	-
Potting material	Beijing Tonsan New Material Technology Co., Ltd. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

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Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Signatures of the TÜV NORD CERT engineer)

See authenticated
signature on first page

Object	Manufacturer	Type	Technical Data	Remark
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
Bypass diodes (y=A)	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	MK3050	Tj max = 200°C	-
Bypass diodes (y=B)	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	MK4050	Tj max = 200°C	-
Bypass diodes	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	MK5050	Tj max = 200°C	-
Cable	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	62930 IEC 131 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50507377
Connectors	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	PV-JM601A	Rated Current = 41A	Certificate no.: R 50332967
	Staubli Electrical Connectors AG	PV-KST4-EVO2/xy_UR (male); PV-KBT4-EVO2/xy_UR (female)	Rated Current = 45A (4mm ²)	Certificate no.: R 60127169
	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	PV-JM608	Rated Current = 41A	Certificate no.: R 50374980
	Amphenol Technology (Shenzhen) Co., Ltd.	H4Cabcdef(c=4) (b=B, M or N)	Rated Current = 35A	Certificate no.: R 50388083
Junction box set 6				
Junction box	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH011C-3K PV-ZH011C-3H PV-ZH011C-5	Rated Voltage = 1500VDC Rated Current = 18A (for PV-ZH011C-5); 22A (for PV-ZH011C-5); 25A (for PV-ZH011C-5); 30A (for PV-ZH011C-5); 30A (for PV-ZH011C-3K, PV-ZH011C-3H, PV-ZH011C-5) Number of diodes: 3	Certificate no.: B 082630 0028 Rev. 00
Adhesive (junction box)	Tonsan Adhesive, Inc H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Goloho Chemical Industry Ltd.	GOLOHO-63	-	-
	Jiangsu Tianchen New Material Co., Ltd.	TS-688	-	-
	Jiangsu Tianshun new Material Technology Co., Ltd	TS6568	-	-
	HangZhou Zhijiang Silicone Chemicals CO., LTD	JS-606	-	-
	Jiangsu CREVO Science&Technology Co., Ltd	CV709	-	-

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Confirmation of TÜV NORD CERT
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(S) See authenticated signature on first page (CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
	Jiangsu CREVO Science&Technology Co., Ltd	CREVO709	-	-
	Sika India Pvt. Ltd.	Sika AS 60 CN	-	-
	DOW CORNING	PV804	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-8258	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd	SMG533	-	-
	CHENDU GUIBAO SCIENCE & TECHNOLOGY CO., LTD. Chengdu Guibao New Material Co., Ltd	888A	-	-
	Suzhou Datong Advanced Material Co., Ltd.	TT600	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	BEIJING TONSAN New Material Technology Co., LTD. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1533	-	-
	BEIJING TONSAN New Material Technology Co., LTD. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521	-	-
	Jiangsu CREVO Science&Technology Co., Ltd	CV315	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
	DOW Corning Corporation	PV-7326	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-6360A/B	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SKF323	-	-
	CHENDU GUIBAO SCIENCE&TECHNOLGY CO., LTD. Chengdu Guibao New Material Co., Ltd	4808	-	-
	Suzhou Datong Advanced Material Co., Ltd.	TT700J	-	-
Bypass diodes (for PV-ZH011C-3K; PV-ZH011C-3H)	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	SKT5045F	Tj max = 200°C Rated current = 30A	-
Bypass diodes (for PV-ZH011C-5)	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	25SQ045	Tj max = 200°C Rated current = 18A	-
Bypass diodes (for PV-ZH011C-5)	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	30SQ045	Tj max = 200°C Rated current = 22A	-

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Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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(See authenticated signature on first page) (TÜV NORD CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
Bypass diodes (for PV-ZH011C-5)	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	35SQ045	Tj max = 200°C Rated current = 25A	-
Bypass diodes (for PV-ZH011C-5)	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	40SQ045	Tj max = 200°C Rated current = 30A	-
Cable	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	62930 IEC 131 1x4.0mm ² , 1x6.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50436635
Connectors	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH202B	Rated Voltage = 1500VDC Rated Current = 40A	Certificate no.: R 50350557
	Staubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated Voltage = 1500VDC Rated Current = 45A (4mm ²)	Certificate no.: R 60127169
	Staubli Electrical Connectors AG	PV-KST4-EVO 2A/xy; PV-KBT4-EVO 2A/xy	Rated Voltage = 1500VDC Rated Current = 45A (4mm ²)	Certificate no.: R 60127169
	Jiangxi Jinko PV Material Co., Ltd.	PV-JK03M2/xy(Plug+Socket)	Rated Voltage = 1500VDC Rated Current = 45A (4mm ²)	Certificate no.: B 112370 0005 Rev.01
Junction box set 7				
Junction box	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	FT60xy (x=1 or 2, y=B or D)	Rated Voltage = 1500VDC Rated Current = 30A for (x=2), 32A for (x=1) Number of diodes: 3	Certificate no.: R 50497914
Adhesive (junction box)	TONSAN ADHESIVE INC. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	DOW CORNING	PV8101F	-	-
	Jiangsu MingHao New Mstar Technology Ltd.	MH-3668	-	-
	Goloho Chemical Industrial Co., Ltd.	GOLOHO63	-	-
	JIANGSU TIANSHENG NEW MATERIALS SCIENCE AND TECHNOLOGY CO., LTD.	TS-688	-	-
	DOW CORNING	PV-804	-	-
	DOW CORNING	PV-8007	-	-
	Momentive Performance Materials	RTV 3642	-	-
	Hangzhou Zhijiang Silicone Chemicals CO., LTD.	JS-606	-	-

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Shanghai, 2026-04-13 (Place and date)

(See authenticated signature on first page) CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
	Chengdu Guibao Science and Technology Co., Ltd. Chengdu Guibao New Material Co., Ltd	888A	-	-
	LIYANG KANGDAWEI INDUSTRIAL CO., LTD	KDW1536	-	-
	Otto Hermann GmbH	Novasil SP 5728/S-CA2105	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT8258	-	-
	Jiangsu Crevo Science & Technology Co., Ltd.	CV709	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SMG533	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	TONSAN ADHESIVE, INC H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521	-	-
	TONSAN ADHESIVE, INC H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1533	-	-
Bypass diodes	Zhejiang Renhe Photovoltaic Technology Co., Ltd. OEM: ChangZhou Star Sea Electronics Co., Ltd.	RMK4560D (for FT60xy (x=1))	Tj max = 200°C	-
	Zhejiang Renhe Photovoltaic Technology Co., Ltd. OEM: ChangZhou Star Sea Electronics Co., Ltd.	RMK4555D (for FT60xy (x=2))	Tj max = 200°C	-
Cable	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50318681
	Trina Solar Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50426462
	Trina Solar Co., Ltd.	62930 IEC 131 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50451199
	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	62930 IEC 131 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50452023
Connectors	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	05-8	Rated Voltage = 1500VDC Rated Current = 30A	Certificate no.: R 50334688
	Amphenol Technology (Shenzhen) Co.,Ltd.	UTXCFabcd; UTXCMabcd	Rated Voltage = 1500VDC Rated Current = 35A	Certificate no.: R 50340393
	Staubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated Voltage = 1500VDC Rated Current = 45A (4mm ²)	Certificate no.: R 60127169
	Tyco Electronics (Shanghai) Co., Ltd.	PV4-S1yx (y=F or M; x=4.0)	Rated Voltage = 1500VDC Rated Current = 40A (x=4.0)	Certificate no.: R 50372137

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Chengdu, 2026-04-13 (Place and date)

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Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Object	Manufacturer	Type	Technical Data	Remark
	Trina Solar CO., Ltd.	TS4-xz(x=1, z=2)	Rated Voltage = 1500VDC Rated Current = 41A (4mm ²)	Certificate no.: R 50385924
	Phoenix Contact GmbH & Co.KG	PV-CF-C-2,5-4-SETxxx; PV-CM-C-2,5-4-SETxxx	Rated Voltage = 1500VDC Rated Current = 30A (4mm ²)	Certificate no.: R 60126961
	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	RHC2xyzu	Rated Voltage = 1500VDC Rated Current = 35A (4mm ²)	Certificate no.: R 50473621
Junction box set 8				
Junction box	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	FT70xy (x = 1, 2, 3 or 4, y = B D, F or H)	Rated Voltage = 1500VDC Rated current = 25A for (x = 1), 28A for (x = 2), 30A for (x = 3), 35A for (x=4) Reverse current = 54A RTI = 110°C Number of diodes: 3 for (y=B or D); 2 for (y=F or H)	Certificate no. R 50527912
Adhesive (junction box)	TONSAN ADHESIVE INC. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	DOW CORNING	PV8101F		
	Jiangsu MingHao New Mstar Technology Ltd.	MH-3668		
	GOLOHO Chemical Industrial Limited	GOLOHO63	-	-
	JIANGSU TIANSHENG NEW MATERIALS SCIENCE AND TECHNOLOGY CO., LTD.	TS-688	-	-
	DOW CORNING	PV-804	-	-
	DOW CORNING	PV-8007	-	-
	Momentive Performance Materials	RTV 3642	-	-
	Hangzhou Zhijiang Silicone Chemicals CO., LTD.	JS-606	-	-
	Chengdu Guibao Science and Technology Co., Ltd. Chengdu Guibao New Material Co., Ltd	888A	-	-
	LIYANG KANGDAWEI INDUSTRIAL CO., LTD	KDW 1536	-	-
	Otto Hermann GmbH	Novasil SP 5728/S-CA2105	-	-
	Jiangsu Tianchen New Materials Co., Ltd	HT8258	-	-
	Jiangsu Crevo Science & Technology Co., Ltd. Sika (Jiangsu) Industrial Material Ltd.	CV709	-	-

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Shanghai, 2026-04-13 (Place and date)

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(S) See authenticated signature on first page (CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SMG533	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	9661	-	Tested with PV modules
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	TONSAN ADHESIVE INC H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521	-	-
	TONSAN ADHESIVE INC H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1533	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd	SKF323	-	-
	Liyang Kangdawei Industrial Co., Ltd	KDW-3582	-	-
	Jiangsu Tianchen New Materials Co., Ltd	HT6360	-	-
	Shen Zhen Evopute Industry Material Co., Ltd.	OPT3155-1	-	-
	Jiangsu Crevo Science & Technology Co., Ltd. Sika (Jiangsu) Industrial Material Ltd.	CV315	-	Tested with PV modules
Bypass diodes (for x=1)	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	PS35TA	Tj max = 200°C If = 35A	-
Bypass diodes (for x=2)	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	PS40TA	Tj max = 200°C If = 40A	-
Bypass diodes (for x=3)	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	PS50TA	Tj max = 200°C If = 50A	-
Bypass diodes (for x=4)	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	PS50TD	Tj max = 200°C If = 50A	-
Cable	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50452023
Connectors	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	05-8	Rated current = 30 A	Certificate no.: R 50334688
				Certificate no.: R 50512443
	Amphenol Technology (Shenzhen) Co., Ltd.	UTXCFabcd; UTXCMabcd	Rated current = 35A	Certificate no.: R 50340393
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated current = 45A (4.0mm ²)	Certificate no.: R 60127169
	Stäubli Electrical Connectors AG	PV-KST4-EVO2A/xy PV-KBT4-EVO2A/xy	Rated voltage = 1500VDC Rated current = 45A	Certificate no.: R 60127169

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

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Shanghai, 2026-04-13 (Place and date)

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Object	Manufacturer	Type	Technical Data	Remark
	Tyco Electronics (Shanghai) Co., Ltd.	PV4-S1yx (y=F or M; x=4.0)	Rated current = 40A (x=4.0)	Certificate no.: R 60148776
	Trina Solar Co., Ltd.	TS4-xz(x=1, z=2)	Rated current = 41A (4.0mm ²)	Certificate no.: R 50385924
	Phoenix Contact GmbH & Co.KG	PV-CF-C-2,5-4-SETxxxx PV-CM-C-2,5-4-SETxxxx	Rated current = 30A (4.0mm ²)	Certificate no.: R 60126961
	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	RHC2xyzu	Rated current = 35A (4.0mm ²)	Certificate no.: R 50473621
Junction box set 9				
Junction box	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	JM07w (w=Blank, L, R, S, 6, 7, 8, 9, 10 or 11)	Rated Voltage = 1500VDC Rated current = 20A for (x = blank, L, 6, 9), 25A for (x = R, S, 7, 10), 30A for (x = 8, 11) Reverse current = 41A Number of diodes: 3 or 2	Certificate no. R 50529604
Adhesive (junction box)	TONSAN ADHESIVE INC. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Jiangsu Crevo Science & Technology Co., Ltd.	CV709	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606		
	Jiangsu Tianchen New Material Co., Ltd.	HT8258		
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	TONSAN ADHESIVE INC H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521 1533	-	-
	Jiangsu Crevo Science & Technology Co., Ltd.	CV315	-	-
	CHENGDU GUIBAO SCIENCE & TECHNOLOGY CO., LTD Chengdu Guibao New Material Co., Ltd	4808	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd	SKF323	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
	DOW CORNING	PV-7326	-	-
Bypass diodes (for x=blank, L)	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	THY2550(3) THY2550(1) THY2550(4)	Tj max = 200°C If = 25A	-

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Shanghai, 2026-04-13 (Place and date)

(See authenticated signature on first page) CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
Bypass diodes (for x=R, S)	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	THY4050 SBT4050DY	Tj max = 200°C If = 40A	-
Bypass diodes (for x=6)	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	RT3050	Tj max = 200°C If = 30A	-
Bypass diodes (for x=7)	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	RT3550	Tj max = 200°C If = 35A	-
Bypass diodes (for x=8)	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	RT4550	Tj max = 200°C If = 45A	-
Cable	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50507377
Connectors	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	PV-JM601A	Rated current = 41A	Certificate no.: R 50332967
	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	PV-JM608	Rated current = 41A	Certificate no.: R 50374980
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated current = 45A (4.0mm ²)	Certificate no.: R 60127169
Junction box set 10				
Junction box	Ningbo Minghe New Energy Technology Co., Ltd.	MH2z (z=3 or 4)	Rated Voltage = 1500VDC Rated current = 25A for (z=3), 30A for (z=4) Reverse current = 41A Number of diodes: 3	Certificate no. R 50527916
Adhesive (junction box)	TONSAN ADHESIVE INC. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Sika (Jiangsu) Industrial Material Ltd.	CV709	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-8258	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
Bypass diodes (for z=3)	Yangzhou Yangjie Electronic Co., Ltd.	30SQ045-SL	Tj max = 200°C If = 30A	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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See authenticated
signature on first page

Object	Manufacturer	Type	Technical Data	Remark
Bypass diodes (for z=4)	Yangzhou Yangjie Electronic Co., Ltd.	40SQ045	Tj max = 200°C If = 40A	-
Cable	Wuxi Xinhongye Wire & Cable Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50439595
	Ningbo Kibor Wire & Cable Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50413678
Connectors	Ningbo Minghe New Energy Technology Co., Ltd.	PV-MH5	Rated current = 41A	Certificate no.: R 50528808
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated current = 41A	Certificate no.: R 60127169
Junction box set 11				
Junction box	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	FT50xy (x=4, 5, 6, 8, 9 or B, y=B, D, F, H or K)	Rated Voltage = 1500VDC Rated current = 25A for (x=4 or 8), 28A for (x=5), 30A for (x=6 or 9), 35A for (x=B) Reverse current = 48A Number of diodes: 3	Certificate no. R 50415465
Adhesive (junction box)	TONSAN ADHESIVE INC. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	DOW CORNING	PV810F PV804 PV-8007	-	-
	Jiangsu Minghao New Mstar Technology Ltd.	MH-3668		
	Goloho Chemical Industrial Co., Ltd.	GOLOHO63	-	-
	Jiangsu Tiansheng New Materials Science and Technology Co., Ltd.	TS-688	-	-
	Momentive Performance Materials	RTV 3642	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	-	-
	Chengdu Guibao Science and Technology Co., Ltd. Chengdu Guibao New Material Co., Ltd	888A	-	-
	Liyang Kandawei Industrial Co., Ltd.	KDW1536	-	-
	Jiangsu Crevo Science & Technology Co., Ltd.	CV709	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-8258	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SMG533	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

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See authenticated
signature on first page

Object	Manufacturer	Type	Technical Data	Remark
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	TONSAN ADHESVE INC H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521 1533	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SKF323	-	-
	Liyang Kandawei Industrial Co., Ltd.	Kdw-3582	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT6360	-	-
Bypass diodes (for x=4)	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	FMK5040D FMK4545D FMK4560T	Tj max = 200°C	-
Bypass diodes (for x=5)	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	FMK3040P	Tj max = 200°C	-
Bypass diodes (for x=6)	Yangzhou Yangjie Electronic Co., Ltd.	FMK5060D	Tj max = 200°C	-
Bypass diodes (for x=8)	Yangzhou Yangjie Electronic Co., Ltd.	MK4045	Tj max = 200°C	-
Bypass diodes (for x=9)	Yangzhou Yangjie Electronic Co., Ltd.	MK5045	Tj max = 200°C	-
Bypass diodes (for x=B)	Yangzhou Yangjie Electronic Co., Ltd.	MK6045	Tj max = 200°C	-
Cable	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50452023
	Trina Solar Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50451199
Connectors'	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	05-8	Rated current = 30A	Certificate no.: R 50334688
	Amphenol Technology (Shenzhen) Co., Ltd.	UTXCFabcd; UTXCMabcd	Rated current = 35A	Certificate no.: R 50340393
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2A/xy_UR; PV-KBT4-EVO 2A/xy_UR	Rated current = 41A	Certificate no.: R 60127169
	Trina Solar Co., Ltd.	TS4-xz	Rated current = 41A	Certificate no.: R 50385924
	Phoenix Contact GmbH & Co., KG	PV-CF-C-2, 5-4- SETxxxx PV-CM-C-2, 5-4- SETxxxx	Rated current = 30A	Certificate no.: R 6126961

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

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Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Object	Manufacturer	Type	Technical Data	Remark
	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	RHC2xyzu	Rated current = 35A	Certificate no.: R 50473621
Junction box set 12				
Junction box	Jiangsu Tongling Electric Co., Ltd.	TL-BOX022.3-A-2-1xyzF TL-BOX022.3-A-2-2xF TL-BOX022.3-A-2-3xyzF TL-BOX022.3-B-2-1xyzF TL-BOX022.3-B-2-2xF TL-BOX022.3-B-2-3xyzF	Rated Voltage = 1500VDC Rated current = 25A for (x=4) Reverse current = 41A Number of diodes: 3	Certificate no. R 50539999
Adhesive (junction box)	TONSAN ADHESIVE INC. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	TONSAN ADHESIVE INC H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521 1533	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-6360AB	-	-
Bypass diodes (for x=4)	Jiangsu Tongling Electric Co., Ltd.	PT001B-HS	Tj max = 200°C	-
Cable	Suzhou Baohing Electric Wire & Cable Manufactured by Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50464210
	Wuxi Xinhongye Wire & Cable Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50439595
	Changshu JHOSIN Communication Technology Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50413335
	Jiangsu Tongling Electric Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50462100
Connectors	Amphenol Technology (Shenzhen) Co., Ltd.	UTXCFabcd; UTXCMabcd	Rated current = 42A	Certificate no.: R 50340393
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated current = 35A	Certificate no.: R 60127169
	Jiangsu Tongling Electric Co., Ltd.	TL-CABLE01S-F TL-CABLE01S	Rated current = 41A	Certificate no.: R 50514839

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Object	Manufacturer	Type	Technical Data	Remark
		BIGabc4efgh	Rated current = 41A	Certificate no.: R 50524455
	Hanwha Q CELLS (Qidong) Co., Ltd.	HQC4	Rated current = 30A	Certificate no.: R 50385866
	Trina Solar Co., Ltd.	TS4	Rated current = 41A	Certificate no.: R 50508240
Junction box set 13				
Junction box	Tongwei Solar (Hefei) Co., Ltd.	PVJB-TW-ab (a=2 or 3, b=2or 3)	Rated Voltage = 1500VDC Rated current = 25A for (b=2), 30A for (b=3) Reverse current = 54A Number of diodes: 3	Certificate no. R 50559635
Adhesive (junction box)	TONSAN ADHESIVE INC. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT8258	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	TONSAN ADHESIVE INC H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521 1533	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-6360	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
Bypass diodes (b=2)	Changzhou Star Sea Electric Co., Ltd. Yangzhou Yangjie Electric Technology Co., Ltd. Hangzhou Daoming Microelectronics Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Yangzhou Hongyang Electronics Co., Ltd.	35SQ045	Tj max = 200°C	-
Bypass diodes (b=3)	Changzhou Star Sea Electric Co., Ltd. Yangzhou Yangjie Electric Technology Co., Ltd. Hangzhou Daoming Microelectronics Technology Co., Ltd. Anhui Juxin Semiconductor Technology Co., Ltd. Yangzhou Hongyang Electronics Co., Ltd.	40SQ045	Tj max = 200°C	-
Cable	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50452023

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Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Object	Manufacturer	Type	Technical Data	Remark
	Wuxi Xinhongye Wire & Cable Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50439595
	Ninbo Kibor Wire & Cable Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50413678
	Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50507377
	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50436635
Connectors	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	RHC2xyzu	Rated current = 35A	Certificate no.: R 50473621
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated current = 45A	Certificate no.: R 60127169
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2A/xy_UR; PV-KBT4-EVO 2A/xy_UR	Rated current = 45A	Certificate no.: R 60127169
	Ningbo Minghe New Energy Technology Co., Ltd.	PV-MH5	Rated current = 41A	Certificate no.: R 50528808
	Zhejiang Jiaming Tianheyuan Photovoltaic Technology Co., Ltd.	PV-JM608	Rated current = 41A	Certificate no.: R 50374980
	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH202B	Rated current = 40A	Certificate no.: R 50350557
Junction box set 14				
Junction box	Suzhou Xietong Photovoltaic Technology Co., Ltd.	PV-XT1609Nxyz	Rated Voltage = 1500VDC Rated current = 25A or 30A or 35A Reverse current = 48A Number of diodes: 3	Certificate no. B 076061 Rev.04
Adhesive (junction box)	TONSAN ADHESIVE INC. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Liyang Kangdawei Industry Co., Ltd.	KDW-1536	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	TONSAN ADHESIVE INC H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521	-	-
	Liyang Kangdawei Industry Co., Ltd.	KDW-3582	-	-
		XT3050A	Tj max = 200°C	-

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(Signed by TÜV NORD CERT engineer)

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Object	Manufacturer	Type	Technical Data	Remark
Bypass diodes	Suzhou Xietong Photovoltaic Technology Co., Ltd.	XT4050M-A	Tj max = 200°C	-
		XT4050M-B	Tj max = 200°C	-
		XT4550M-A	Tj max = 200°C	-
		XT4550M-B	Tj max = 200°C	-
		XT5050M-A	Tj max = 200°C	-
		XT5050M-B	Tj max = 200°C	-
Cable	Suzhou Xietong Photovoltaic Technology Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50453577
	Wuxi Xinhongye Wire & Cable Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50439595
Connectors	Suzhou Xietong Photovoltaic Technology Co., Ltd.	PV-XT101.1	Rated current = 35A	Certificate no.: R 50385354
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated current = 45A	Certificate no.: R 60127169
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2A/xy_UR; PV-KBT4-EVO 2A/xy_UR	Rated current = 45A	Certificate no.: R 60127169
Junction box set 15				
Junction box	Jiangsu Tongling Electric Co., Ltd.	TL-BOX022.3-A-2-1xyzF TL-BOX022.3-A-2-2xF TL-BOX022.3-A-2-3xyzF TL-BOX022.3-B-2-1xyzF TL-BOX022.3-B-2-2xF TL-BOX022.3-B-2-3xyzF	Rated Voltage = 1500VDC Rated current = 20A or 25A or 30A Reverse current = 41A Number of diodes: 3	Certificate no. B 079881 0008
Adhesive (junction box)	TONSAN ADHESIVE INC. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
Potting material	TONSAN ADHESIVE INC. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521	-	-
Bypass diodes (for x=4)	Jiangsu Tongling Electric Co., Ltd.	PT001B-SH	Tj max = 200°C	-
	Jiangsu Tongling Electric Co., Ltd.	PT001B-SHL	Tj max = 200°C	-
	Jiangsu Tongling Electric Co., Ltd.	PT001B-HS	Tj max = 200°C	-
	Jiangsu Tongling Electric Co., Ltd.	PT001B-HS-25	Tj max = 200°C	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

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Shanghai, 2026-04-13 (Place and date)

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(Signatures of TÜV NORD CERT engineer)

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Object	Manufacturer	Type	Technical Data	Remark
	Jiangsu Tongling Electric Co., Ltd.	PT001B-HS-30	Tj max = 200°C	-
Cable	Jiangsu Tongling Electric Co., Ltd.	62930 IEC 131 1x4.0 mm ²	Rated voltage = 1500VDC	Certificate no.: R 50462100
Connectors	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated current = 35A	Certificate no.: R 60127169
	Jiangsu Tongling Electric Co., Ltd.	TL-CABLE01S-F TL-CABLE01S	Rated current = 41A	Certificate no.: R 50514839
Junction box set 16				
Junction box	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH011C-5xyz (x = 1 or 2, y = B, z = 2 or 3)	Rated Voltage = 1500VDC Rated current = 25A for (z = 2), 30A for (z = 3) Reverse current = 45A RTI = 110°C Number of diodes: 3 for (x=1); 2 for (x=2)	Certificate no. R 50505349
Adhesive (junction box)	Shanghai Huitian New Material Co., Ltd.	9661	-	-
	Hubei Huitian New Materials Co., Ltd.			
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	-	-
	Sika (Jiangsu) Industrial Material Ltd.	CREVO709	-	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1527	-	--
Potting material	Shanghai Huitian New Material Co., Ltd.	HT906Z	-	-
	Hubei Huitian New Materials Co., Ltd.			
Bypass diodes (for z=2)	H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	5299W-S	-	-
		1533	-	
Bypass diodes (for z=2)	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	35SQ045	Tj max = 200°C If = 35A	-
Bypass diodes (for z=3)	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	40SQ045	Tj max = 200°C If = 40A	-
Bypass diodes (for z=2)	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	35SQ045-ST	Tj max = 200°C If = 35A	-
Bypass diodes (for z=3)	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	40SQ045-ST	Tj max = 200°C If = 40A	-
Cable	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	62930 IEC 131 1x4.0mm ² , 1x6.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50436635
Connectors	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH202B	Rated current = 40A	Certificate no.: R 50350557

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Shanghai, 2026-04-13 (Place and date)

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Object	Manufacturer	Type	Technical Data	Remark
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated current = 45A (4.0mm ²)	Certificate no.: R 60127169
	Stäubli Electrical Connectors AG	PV-KST4-EVO2A/xy PV-KBT4-EVO2A/xy	Rated voltage = 1500VDC Rated current = 45A	Certificate no.: R 60127169
	Hanwha Q CELLS (Qidong) Co., Ltd.	HQC4	Rated current = 30A	Certificate no.: R 50385866
Junction box set 17				
Junction box	Zhejiang Chuangyuan Photovoltaic Technology Co., Ltd.	PV-CY21xyz(x=1 or 2 or 3)	Rated Voltage = 1500VDC Rated current = 20A for (x=1), 25A for (x=2), 30A for (x=3) Reverse current = 40A Number of diodes: 3	Certificate no. R 50495966
Adhesive (junction box)	CHENGDU GUIBAO SCIENCE & TECHNOLOGY CO., LTD. Chengdu Guibao New Material Co., Ltd	888A	-	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd. Beijing TONSAN New Material Technology Co., Ltd	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Sika (Jiangsu) Industrial Material Ltd.	CV709	-	-
Potting material	CHENGDU GUIBAO SCIENCE & TECHNOLOGY CO., LTD Chengdu Guibao New Material Co., Ltd	4808	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd. Beijing TONSAN New Material Technology Co., Ltd	1533 1521	-	-
	Sika (Jiangsu) Industrial Material Ltd.	CV315	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd..	JS-1184	-	-
Bypass diodes	Yangzhou Yangjie Electronic Technology Co., Ltd.	30SQ045-SL	Tj max = 200°C If = 25A for PV-CY21xyz(x= 2)	-
		25SQ045	Tj max = 200°C If = 20A for PV-CY21xyz(x= 1)	-
		40SQ045	Tj max = 200°C If = 30A for PV-CY21xyz(x= 3)	-

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Shanghai, 2026-04-13 (Place and date)

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(Signatures of TÜV NORD CERT engineer)

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Object	Manufacturer	Type	Technical Data	Remark
Cable	Zhejiang Chuangyuan Photovoltaic Technology Co.,Ltd.	62930 IEC 131 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50495727
Connectors	Zhejiang Chuangyuan Photovoltaic Technology Co.,Ltd.	PV-CY03L	Rated voltage = 1500VDC Rated current = 30A	Certificate no.: R 50378729
		PV-CY20L	Rated voltage = 1500VDC Rated current = 40A	Certificate no.: R 50495997
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated voltage = 1500VDC Rated current = 45A	Certificate no.: R 60127169
		PV-KST4-EVO2A/xy PV-KBT4-EVO2A/xy	Rated voltage = 1500VDC Rated current = 45A	Certificate no.: R 60127169
Junction box set 18				
Junction box	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd	PV-ZH001	Rated Voltage = 1500VDC Rated current = 20A, 25A ,30A Reverse current = 40A Number of diodes: 3	Certificate no. B 082630 0032
Adhesive (junction box)	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-8258	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-6360A/B	-	-
Bypass diodes	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd	30SQ045	Tj max = 200°C If = 30A	-
		35SQ045	Tj max = 200°C If = 35A	-
		40SQ045	Tj max = 200°C If = 40A	-
Cable	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd	62930 IEC 131 1x4.0mm ² 1x6.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50436635
Connectors	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd	PV-ZH202B	Rated current = 40A	Certificate no.: B 082630 0021
		PV-ZH202D	Rated current = 40A	Certificate no.: B 082630 0031
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated voltage = 1500VDC Rated current = 45A	Certificate no.: R 60127169
		PV-KST4-EVO2A/xy PV-KBT4-EVO2A/xy	Rated voltage = 1500VDC Rated current = 45A	Certificate no.: R 60127169
Junction box set 19				

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(Signatures of the TÜV NORD CERT engineer)

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signature on first page

Object	Manufacturer	Type	Technical Data	Remark
Junction box	Tongwei Solar (Hefei) Co., Ltd.	TW-OSPVJB01-ab	Rated Voltage = 1500VDC Rated current = 20A, 25A ,30A Reverse current = 40A Number of diodes: 3	Certificate no. B 090075 0026
Adhesive (junction box)	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-8258	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-6360A/B	-	-
Bypass diodes	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd	30SQ045	Tj max = 200°C If = 30A	-
		35SQ045	Tj max = 200°C If = 35A	-
		40SQ045	Tj max = 200°C If = 40A	-
Cable	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd	62930 IEC 131 1x4.0mm² 1x6.0mm²	Rated Voltage = 1500VDC	Certificate no.: R 50436635
Connectors	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd	PV-ZH202B	Rated current = 40A	Certificate no.: B 082630 0021
		PV-ZH202D	Rated current = 40A	Certificate no.: B 082630 0031
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated voltage = 1500VDC Rated current = 45A	Certificate no.: R 60127169
		PV-KST4-EVO2A/xy PV-KBT4-EVO2A/xy	Rated voltage = 1500VDC Rated current = 45A	Certificate no.: R 60127169
Junction box set 20				
Junction box	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH01A	Rated Voltage = 1500VDC Rated current = 25A ,30A Reverse current = 50A Number of diodes: 3	Certificate no. B 082630 0026
Adhesive (junction box)	Tonsan Adhesive, Inc H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	GOLOHO Chemical Industry Ltd.	GOLOHO-63	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(S. See authenticated signature on first page CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
	Jiangsu Tianchen New Material Co., Ltd.	TS-688	-	-
	Jiangsu Tianshun new Material Technology Co., Ltd	TS6568	-	-
	HangZhou Zhijiang Silicone Chemicals CO., LTD	JS-606	-	-
	Jiangsu CREVO Science&Technology Co., Ltd	CV709	-	-
	Jiangsu CREVO Science&Technology Co., Ltd	CREVO709	-	-
	Sika India Pvt. Ltd.	Sika AS 60 CN	-	-
	DOW CORNING	PV804	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-8258	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd	SMG533	-	-
	CHENDU GUIBAO SCIENCE&TECHNOLOGY CO., LTD. Chengdu Guibao New Material Co., Ltd	888A	-	-
	Suzhou Datong Advanced Material Co., Ltd.	TT600	-	-
Potting material	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	BEIJING TONSAN New Material Technology Co., LTD. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1533	-	-
	BEIJING TONSAN New Material Technology Co., LTD. H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	1521	-	-
	Jiangsu CREVO Science&Technology Co., Ltd	CV315	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
	DOW Corning Corporation	PV-7326	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-6360A/B	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SKF323	-	-
	CHENDU GUIBAO SCIENCE&TECHNOLGY CO., LTD. Chengdu Guibao New Material Co., Ltd	4808	-	-
	Suzhou Datong Advanced Material Co., Ltd.	TT700J	-	-
	Zhejiang Hyperion New Material Co., Ltd.	HB9952	-	-
	Shenzhen Opute Industry Material Co., Ltd.	315	-	-
	Jolywood (Suzhou) Sunwatt Co., Ltd./ Jolywood (Jiangsu) Sunwatt Co., Ltd	JW-3707	-	-

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Object	Manufacturer	Type	Technical Data	Remark
	Sika(Jiangsu) industrial Material Ltd.	Sikasil®AS-747 SL	-	-
Bypass diode	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	40SQ045	Tj max = 200°C Rated current = 30A	-
	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	50SQ045	Tj max = 200°C Rated current = 30A	-
Cable	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	62930 IEC 131 1x4.0mm², 1x6.0mm²	Rated Voltage = 1500VDC	Certificate no.: R 50436635
Connectors	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH202B	Rated Voltage = 1500VDC Rated Current = 40A	Certificate no.: R 50350557
	Staubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated Voltage = 1500VDC Rated Current = 45A (4mm²)	Certificate no.: R 60127169
	Staubli Electrical Connectors AG	PV-KST4-EVO 2A/xy; PV-KBT4-EVO 2A/xy	Rated Voltage = 1500VDC Rated Current = 45A (4mm²)	Certificate no.: R 60127169
	Tongwei Solar (Hefei) Co., Ltd.	TW-PVCON-01	Rated current = 40A	Certificate no.: B 090075 0018
Junction box set 21				
Junction box	Brand: Tongwei Solar (Hefei) Co. Ltd. Manufactured by: Zhejiang Zhonghuan Sunter PV Technology Co., Ltd. QC Solar (Suzhou) Corporation Zhejiang Jiaming Tianheyuan Photovoltaics Technology Co., Ltd. Zhejiang Minghe New Energy Technology Co., Ltd. Jiangsu Tonglin Electric Co., Ltd. Zhejiang Renhe Photovoltaic Technology Co., Ltd. Shidi Photovoltaic Technology (Taizhou) Co., Ltd.	TW-PVJB02-ab	Rated Voltage = 1500VDC Rated current = 25A or 30A Reverse current = 40A Number of diodes: 3	Certificate no. B 090075 0017
Adhesive (junction box)	H.B. Fuller (Suzhou) Advanced Material Co., Ltd. Beijing TONSAN New Material Technology Co., Ltd	TS 1527	-	-
	Shanghai Huitian New Material Co., Ltd. Hubei Huitian New Materials Co., Ltd.	HT906Z	-	-
	Goloho Chemical Industry Ltd.	GOLOHO-63	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-8258	-	-

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Confirmation of TÜV NORD CERT
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(Signed by the TÜV NORD CERT engineer)

See authenticated
signature on first page

Object	Manufacturer	Type	Technical Data	Remark
	CHENGDU GUIBAO SCIENCE & TECHNOLOGY CO., LTD. Chengdu Guibao New Material Co., Ltd	888A	-	-
Potting material	Shanghai Huitian New Material Co.,Ltd. Hubei Huitian New Materials Co., Ltd.	5299W-S	-	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd. Beijing TONSAN New Material Technology Co., Ltd	TS1533	-	-
	Goloho Chemical Industry Ltd.	GOLOHO-313-AB	-	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-1184	-	-
	Jiangsu Tianchen New Material Co., Ltd.	HT-6360A/B	-	-
	CHENGDU GUIBAO SCIENCE & TECHNOLOGY CO., LTD Chengdu Guibao New Material Co., Ltd	4808	-	-
Bypass diodes	Brand: Tongwei Solar (Hefei) Co. Ltd. Manufactured by: 1.Hangzhou Daoming Microelectronics Co. ,Ltd. 2.Yangzhou Yangjie Electronic Technology Co.,Ltd. 3. AnHui Juxin Semiconductor Technology Co.,Ltd. 4.Nantong Gaoxin Science and Technology Development Co., Ltd. 5.Zhejiang Zhonghuan Sunter PV Technology Co.,Ltd. 6.Jiangsu Tonglin Electric Co., Ltd.	35SQ045	Tj max = 200°C If = 35A for 25A rated current	-
	Brand: Tongwei Solar (Hefei) Co. Ltd. Manufactured by: 1.Hangzhou Daoming Microelectronics Co. ,Ltd. 2.Yangzhou Yangjie Electronic Technology Co.,Ltd. 3. AnHui Juxin Semiconductor Technology Co.,Ltd. 4.Nantong Gaoxin Science and Technology Development Co., Ltd. 5.Zhejiang Zhonghuan Sunter PV Technology Co.,Ltd. 6.Jiangsu Tonglin Electric Co., Ltd.	40SQ045	Tj max = 200°C If = 40A for 30A rated current	-
Cable	Tongwei Solar (Hefei) Co., Ltd.	62930 IEC 131 1x4.0mm²& H1Z2Z2-K 1 x4.0mm²	Rated Voltage = 1500VDC	Certificate no.: B 090075 0021
Connectors	Tongwei Solar (Hefei) Co., Ltd.	TW-PVCON-02	Rated voltage = 1500VDC Rated current = 41A	Certificate no.: B 090075 0018

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Chengdu, 2026-04-13 (Place and date)

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Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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signature on first page

Object	Manufacturer	Type	Technical Data	Remark
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR; PV-KBT4-EVO 2/xy_UR	Rated voltage = 1500VDC Rated current = 45A (4.0mm ²) Rated current = 53A (6.0mm ²)	Certificate no.: R 60127169
		PV-KST4-EVO 2A/xy PV-KBT4-EVO 2A/xy	Rated voltage = 1500VDC Rated current = 45A (4.0mm ²) Rated current = 53A (6.0mm ²)	Certificate no.: R 60127169
	Shidi Photovoltaic Technology (Taizhou) Co., Ltd.	SDXNY-TZ-PVCON02	Rated voltage = 1500VDC Rated current = 41A (4.0mm ²) Rated current = 46A (6.0mm ²)	Certificate no.: B 126378 0002

3.10 Others

Object	Manufacturer	Type	Technical Data	Remark
Fluxing agent 1	Suzhou Vital Electronics Material Technology Co., Ltd. Shenzhen Vital New Material Company Limited	WTO-PV105A	-	Tested with PV modules
Fluxing agent 2	Asahi Solder technology (Wuxi) Co., Ltd.	SF56	-	Tested with PV modules
Fluxing agent 3	Suzhou Grabble Electronics Technology Co., Ltd.	FA19	-	Tested with PV modules
Fluxing agent 4	Henkel Loctite (China) Co., Ltd.	X33-08i	-	Tested with PV modules
Fluxing agent 5	Asahi Solder technology (Wuxi) Co., Ltd.	SF180	-	Tested with PV modules
Fluxing agent 6	Suzhou Vital Electronics Material Technology Co., Ltd. Shenzhen Vital New Material Company Limited	WTO-PV302A	-	Tested with PV modules
Fluxing agent 7	Suzhou Vital Electronics Material Technology Co., Ltd. Shenzhen Vital New Material Company Limited	WTO-PV112B	-	Tested with PV modules
Fluxing agent 8	Shenzhen Tong fang Electronic New Material Co., Ltd.	AATF9800-MBB	-	Tested with PV modules
Fluxing agent 9	Suzhou Vital Electronics Material Technology Co., Ltd. Shenzhen Vital New Material Company Limited	WTO-PV112C	-	Tested with PV modules
Fluxing agent 10	Shaoxing Tuobang New Energy Co., Ltd.	NF10V06	-	Tested with PV modules
Fluxing agent 11	Shenzhen Tong fang Electronic New Material Co., Ltd.	TFHF9200	-	Tested with PV modules
Fluxing agent 12	Shaoxing Tuobang New Energy Co., Ltd.	FC10V16	-	Tested with PV modules

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Chengdu, 2026-04-13 (Place and date)

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Confirmation of TÜV NORD CERT
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Object	Manufacturer	Type	Technical Data	Remark
Fluxing agent 13	Suzhou Vital Electronics Material Technology Co., Ltd. Shenzhen Vital New Material Company Limited	WTO-PV109	-	Tested with PV modules
Fluxing agent 14	SUZHOU COSTAR ELECTRONIC MATERIAL CO.,LTD	FD-309	-	Tested with PV modules
Fluxing agent 15	YIK SHING TAT SOLDER MANUFACTURED BY(KUNSHAN) Co., LTD.	Golf703-C	-	Tested with PV modules
Fluxing agent 16	Shenzhen Tong fang Electronic New Material Co., Ltd.	TF-SJ-041	-	Tested with PV modules
Fluxing agent 17	Zhuhai Changxian New Materials Technology CO., LTD	CX700	-	Tested with PV modules
Fluxing agent 18	Hangzhou zhengmeng Environmental Protection Engineering Co., Ltd	NCF-02S	-	Tested with PV modules
Fluxing agent 19	YIK SHING TAT SOLDER MANUFACTURING (KUNSHAN) CO., LTD	WB330-L	-	Tested with PV modules
Fluxing agent 20	SUZHOU COSTAR ELECTRONIC MATERIAL CO.,LTD	FD-306	-	Tested with PV modules
Fluxing agent 21	Suzhou Vital Electronics Material Technology Co., Ltd. Shenzhen Vital New Material Company Limited	WTO-PV107	-	Tested with PV modules
Fluxing agent 22	HANGZHOU ZHENGMENG ENVIRONMENTAL ENGINEERING CO.,LTD	NCF-1087-3	-	Tested with PV modules
Fixing tape 1	Tongwei Solar (Hefei) Co., Ltd.	TWGWJD	Thickness = 0.090mm±0.05mm Transparent	Tested with PV modules
Fixing tape 2	3M	UV-1	Width = 5 / 8 / 10mm±10% Thickness = 0.06±10% mm	Tested with PV modules
Fixing tape 3	TERAOKA SEISAKUSHO CO., LTD.	631S	Width = 5 / 8 / 10 mm±10% Thickness = 0.05±10% mm	Tested with PV modules
Fixing tape 4	Cybrid Technologies Inc.	FF-3665	Width = 5 / 8 / 10 mm±10% Thickness = 0.065 ±20% mm	Tested with PV modules
Fixing tape 5		FF-3665 (T50)	Width = 5 / 8 / 10 mm±10% Thickness = 105±10 µm	Covered by main tested type
Fixing tape 6		FF-3665 (T75)	Width = 5 / 8 / 10 mm±10% Thickness = 130±10 µm	Covered by main tested type
Fixing tape 7	Yantai Darbond Technology CO., LTD.	DT-9609	Width = 5 / 8 / 10 mm±10% Thickness = 0.064 ±10% mm	Tested with PV modules
Fixing tape 8	Guangdong SunRui New Materials Co., Ltd.	HZUV-100	Thickness = 0.12 ±10% mm Transparent	Tested with PV modules
Fixing tape 9	Luqin New Material Technology (Jiangsu) Co., Ltd.	D60F6-2	Width = 5 / 6 / 8 / 10 / 15 mm Thickness = 63/85/100/105/125µm±10% Transparent	Tested with PV modules
Fixing tape 10	Shanghai Hyperion Adhesive Material Co., Ltd.	9966	Width = 5 / 8 / 10mm±0.5mm Thickness = 0.06mm±0.02mm Transparent	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(See authenticated signature on first page) CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
Fixing tape 11	WUXI YKC NEW MATERIAL CO., LTD	YKC-UV100	Thickness = 0.085±0.02mm Transparent	Tested with PV modules
Fixing tape 12	SuZhou Rongzhi Electronic Technology Co.,Ltd	D60F6-4	Thickness = 0.065 ±10%mm Transparent	Tested with PV modules
Fixing tape 13	ZheJiang Rayching Technology Co., Ltd	RC-60F-6	Thickness = 0.06 ±10%mm Transparent	Tested with PV modules
Fixing tape 14	Guangdong Sunrui New Material Co., Ltd.	HZUV-1	Thickness = 0.065 ±0.008mm Transparent	Tested with PV modules
Fixing tape 15	Guangdong Xinrunjia New Materials Co., Ltd.	TA3630	Thickness = 0.065 ±0.008mm Transparent	Tested with PV modules
Fixing tape 16	Lu Qin New Materials Technology (Jiangsu) Co., Ltd.	LK-H21353	Width = 10 / 8mm±0.1mm Thickness = 0.055 / 0.065 / 0.08 / 0.09 / 0.1 / 0.13±0.01 mm Transparent	Tested with PV modules
Fixing tape 17	SuZhou Rongzhi Electronic Technology Co.,Ltd	D60F6-6	Width = 8/10mm±0.5mm Thickness = 0.06 / 0.08 / 0.13±0.005 mm Transparent	Tested with PV modules
Insulation tape 1	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	SE-556	Material = POE/PXP Thickness = 0.2mm - 0.8mm	Tested with PV modules
Insulation tape 2	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.	TF4	Material = POE/ PXP Thickness = 0.2mm - 0.8mm	Tested with PV modules
Insulation tape 3	Cybrid Technologies Inc.	T22H	Material = EVA Thickness = 0.4-0.7mm	Tested with PV modules
Insulation tape 4	Shanghai HIUV New Materials Co., Ltd Chengdu HIUV New Material Technology Co., Ltd.	P507	Material = PXP Thickness = 0.2mm - 0.8mm	Tested with PV modules
Insulation tape 5	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	SE-557	Material = POE Thickness = 0.2mm - 0.8mm	Tested with PV modules
Insulation tape 6	TonyShare (Suzhou) Electronic Material Technology Co., Ltd.	TSGL001	Material = EVA+PET Thickness = 0.2mm - 0.8mm	Tested with PV modules
Insulation tape 7	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd. Suzhou First PV Material Co., Ltd.	BEC-201T	Material = EVA+PET Thickness = 0.2mm - 0.8mm	Tested with PV modules
Insulation tape 8	Heyu Technology Co., Ltd	XM123	Material = EVA+PET Thickness = 0.2mm - 0.8mm	Tested with PV modules
Insulation tape 9	Guangdong SunRui New Material Co., Ltd	SR-JYT03	Material = EVA+PET Thickness = 0.2mm - 0.8mm	Tested with PV modules
Insulation tape 10	Guangdong SunRui New Material Co., Ltd	SR-RL120MJX	Material = EPE Thickness = 0.1mm - 0.8mm	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

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Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Signatures of TÜV NORD CERT engineer)

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Object	Manufacturer	Type	Technical Data	Remark
Insulation tape 11	Heyu Technology Co.,Ltd	BC81	Material = EPE Thickness = 0.1mm - 0.8mm	Tested with PV modules
Insulation tape 12	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	SVK-GL03	Material = EPE Thickness = 0.1mm - 0.7mm	Tested with PV modules
Insulation tape 12	Changzhou Betterial Film Technologies Co., Ltd.	BIF603	Material = EPE Thickness = 0.1mm - 0.8mm	Tested with PV modules
Gap reflective film 1	Heyu Technology Co.,Ltd	BC81 (between cell string)	Thickness = 0.08-0.23mm	Tested with PV modules
Gap reflective film 2	Guangdong Sunrui New Material Co., Ltd.	SR-RL120MJX (between cell string)	Thickness = 0.08-0.23mm	Tested with PV modules
Gap reflective film 3	Changzhou Sveck Photovoltaic New Material Co., Ltd. Changzhou Sveck New Material Technology Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	SVK-JX02 (between cell string)	Thickness = 0.08-0.23mm	Tested with PV modules
Gap reflective film 4	TonyShare (Suzhou) Electronic Material Technology Co., Ltd.	JX-05(between cell string)	Thickness = 0.08-0.23mm	Tested with PV modules
Gap reflective film 5	Heyu Technology Co.,Ltd	WM800 (Surrounding the interior of PV module)	Thickness=0.075-0.21mm	Tested with PV modules
Gap reflective film 6	Changzhou Sveck Photovoltaic New Material Co., Ltd. Yancheng Sveck New Materials Co., Ltd.	SVK-JX01W (Surrounding the interior of PV module)	Thickness=0.07-0.15mm	Tested with PV modules
Gap reflective film 7	TonyShare (Suzhou) Electronic Material Technology Co., Ltd.	JX-07 (between cell string)	Thickness=0.08-0.23mm	Tested with PV modules
Gap reflective film 8	Ningbo Exciton New Energy Co., Ltd.	ET70RX-7 (between cell string)	Thickness=0.08-0.23mm	Tested with PV modules
Gap reflective film 9	Ningbo Exciton New Energy Co., Ltd.	ET110RX-T (Surrounding the interior of PV module and between cell string)	Thickness=0.08-0.23mm Transparent	Tested with PV modules
Gap reflective film 10	Wuxi YKC New Material Co.,Ltd SuZhou YKC Photovoltaic Material Co., Ltd	YKC-125 (between cell string)	Thickness=0.08-0.23mm	Tested with PV modules
Edge sealing	H.B. FULLER (SUZHOU) ADVANCED MATERIAL CO., LTD	PVS 101	Color: black	Tested with PV modules
Water blocking and edge sealing tape 1	Heyu Technology Co.,Ltd	EB60	Width = 10±3 mm Thickness = 50-100 µm	Tested with PV modules

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13(Place and date)

(See authenticated signature on first page) CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
Water blocking and edge sealing tape 2	Changzhou Sveck Photovoltaic New Material Co., Ltd Yancheng Sveck New Materials Co., Ltd.	SVK-ALJD2404	Width = 10±3 mm Thickness = 50-100 µm	Tested with PV modules
Water blocking and edge sealing tape 3	Cybrid Technologies Inc.	CY-640601A	Width = 10±3 mm Thickness = 50-100 µm	Tested with PV modules
Label 1	Suzhou hongyunchang electronic technology co., ltd	-	Layers: PET	Tested with PV modules
Label 2	SEAPRINTING CHANG ZHOU CO., LTD	-	Layers: PET	Tested with PV modules
Label 3	Suzhou ZhengAo Packing Material limited company	-	Layers: PET	Tested with PV modules
Label 4	Jiangsu Simino Packaging Technology Co., Ltd	-	Layers: PET	Tested with PV modules
Label 5	Tongwei Solar (Hefei) Co., Ltd.	-	Layers: PET	Tested with PV modules

4. List of combinations:

4.1 Combination between cells and encapsulant

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(See authenticated signature on first page) (TÜV NORD CERT engineer)

No.	Solar cell	Solar cell's manufacturer	Encapsulant (front side)	Encapsulant(backside)	Encapsulant's manufacturer
1	M182GBTCONBP TOPCon bifacial cell Dimension (w x l) = 182±3mm x 91±10%mm	Tongwei	TF4 TWPT01 PO8110 / 8110	TF4 TWPT01 PO8110 / 8110	First Tongwei 3M
2	M210IBTCONBP TOPCon bifacial cell Dimension (w x l) = 210±3 mm x 105±3 mm		TWPT04 PO8110 / 8110	TWPT04 EVA9110T/9110T	Tongwei 3M
3	M182AGBTCONBP TOPCon bifacial cell Dimension (w x l) = 182±3mm x 105±3mm		TWPT04 P507(EPE)	TWET04 S201MT1	Tongwei HIUV
12	M182AKBTCONBP TOPCon bifacial cell Dimension (w x l) = 182±3mm x 105±3mm		TWPET02 P507(POE)	TWET02 S201MT1	Tongwei HIUV
13	M182KBTCONBP TOPCon bifacial cell Dimension (w x l) = 182.2±0.5mm x 91.875±0.5mm		TWPT02 SE-556	TWET02 SV-15296P	Tongwei Sveck
14	M210OBTCONBP TOPCon bifacial cell Dimension (w x l) = 210±0.5mm x 105±0.5mm		TWPT03 CO-556	TWET03 SV-15296P	Tongwei Sveck
17	M182EGBTCONBP TOPCon bifacial cell Dimension (w x l) = 182.3 ±0.5mm x 71.4±0.5mm		TWPET03 InshineP601	TWET03 InshineE701	Tongwei Yichang
18	M182FGBTCONBP TOPCon bifacial cell Dimension (w x l) = 182.3 ±0.5mm x 53.35±0.5mm		TF4 TWPT01 B601HP	F406P TWET01 B601HP	First Tongwei Betterial
19	M210CIBTCONBP TOPCon bifacial cell Dimension (w x l) = 210.6±0.5mm x 53.4±0.5mm		TWET05 EVA9110T	TWET05 EVA9110T	Tongwei 3M
20	M182E20BTCONBP TOPCon bifacial cell Dimension (w x l) = 182.3 ±0.5mm x 71.6±0.5mm		TWET04 F406P	TWET04 F406P	Tongwei First
			TWET01 SV-15296P	TWET01 SV-15296P	Tongwei Sveck
			TWET03 S201MT1	TWET03 S201MT1	Tongwei HIUV
			TWET02 B602M	TWET02 B601HP	Tongwei Betterial
			TWPET05 PO8110e	TWET05 EVA9110T	Tongwei 3M
			TWPET04 EP304	TWET04 F806W	Tongwei First
			TWPET01 EP304	TWEW01 F806WH	Tongwei First
			TWPET01 P507(EPE)	TWEB01 S201W	Tongwei HIUV
			TWPET02 CO-556	TWEW02 SV-15297B	Tongwei Sveck
			TWPET03 CO-556	TWEB03 CO-556	Tongwei Sveck
			TWPET03 EP304	TWPET03 EP304	Tongwei First

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(See authenticated signature on first page) CERT engineer)

21	M182F20BTCONBP TOPCon bifacial cell Dimension (w x l) = 182.3 ±0.5mm x 53.35±0.5mm		TWPET01 B602M TWPET05 Cybright T22H TWPET06 P507 TWPET02 B602M TWPET05	TWPET01 B601RS TWB05 Cybright T11 TWET06 P507 TWPET02 B602M TWPET05	Tongwei Betterial Tongwei Cybrid Tongwei HIUV Tongwei Betterial Tongwei
4	M210IBPERCBP PERC bifacial cell Dimension (w x l) = 210±3mm x 105±3mm	Tongwei	F406P TWET01 SV-15296P TWET03 EVA9110T TWET04 EP304 TWPET01 S201MT1 TWET02 Cybright T11 B601HP TWET05	EP304 TWPET01 CO-556 TWPET03 PO8110e TWPET04 F406P TWET01 P507 TWPET02 Cybright T22H B602M TWPET05	First Tongwei Sveck Tongwei 3M Tongwei First Tongwei HIUV Tongwei Cybrid Betterial Tongwei
5	M210CBPERCBP PERC bifacial cell Dimension =210±3mm x 105±3mm				
6	M182ABPERCBP SE PERC bifacial cell Dimension =182±3mm x 91±10%mm				
7	M182GBPERCBP SE PERC bifacial cell Dimension =182±3mm x 91±10%mm				
8	M182AGBPERCBP PERC bifacial cell Dimension (w x l) = 182±3mm x 105±3mm				
9	TW210Y218 HJT bifacial cell Dimension (w x l) = 210±3mm x 105±3mm	Tongwei	P507 TWPET02 WT22H CO-557 EP304DC P507C2 CF15&EP304 SZ-247 EP304DC CO-557	P507 TWPET02 T22H CO-556 EP304 P507 CF15&EP304 SV-15296P EP308 CO-557	HIUV Tongwei Cybrid Sveck First HIUV First Sveck First Sveck
10	M210IBHJTBP HJT bifacial cell Dimension (w x l) = 210±3mm x 105±3mm				
11	M210OBHJTBP HJT bifacial cell Dimension (w x l) = 210±3mm x 105±3mm				
22	M210OBHJTBP HJT bifacial cell Dimension (w x l) =210.6 ±3mm x 71.7±3mm				
23	M210IBHJTBP HJT bifacial cell Dimension (w x l) =210.6 ±3mm x 71.7±3mm				
15	M182A0BTBCBP N-Type bifacial solar cell Dimension (w x l) = 182.25 ±3mm x 105.25 ±3mm	Tongwei	TF4 TWPT01 EP304	TF4 TWPT01 EP304	First Tongwei First

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(Signatures of the responsible persons) (RT engineer)

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16	M182AKBTBCBP N-Type bifacial solar cell Dimension (w x l) = 182.25 ±3mm x 105.25 ±3mm		TWPET01	TWPET01	Tongwei
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4.2 Combination between rear cover and encapsulant

No.	Rear cover	Rear cover's manufacture	Encapsulant (front side)	Encapsulant (back side)	Encapsulant's manufacturer
1	N/A	N/A	N/A	N/A	N/A

4.3 Combination between junction box, junction box adhesive and rear cover

No.	Junction box	Junction box's manufacture	Junction box adhesive	Adhesive manufacturer	Rear cover	Rear cover's manufacturer
1	TW-PVJB01-ab TW-PVJB01-qb-ab	Tongwei	HT906Z	Huitian	Glass	N/A
			1527	TONSAN		
			GOLOHO-63	Goloho		
			TS-688	Tianchen		
			TS6568	Tianchen		
			JS-606	Zhijiang		
			CV709	Sika (Jiangsu)		
			CREVO709	Sika (Jiangsu)		
			Sika AS 60 CN	Sika India		
			PV804	DOW CORNING		
			HT-8258	Tianchen		
			SMG533	Baiyun		
			888A	GUIBAO		
			TT600	Datong		
2	JB12x (x=S1)	UKT	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			HT8258	Tianchen		
			JS-606	Zhijiang		
			SMG533	Baiyun		
3	3Qxy (x=3, 4, 5, y=1, 2, 3, 4)	QC	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			JS-606	Zhijiang		
			HT-8258	Tianchen		
			MH-3668	Minghao		
4	PV-JK09Lxy (x=2,	Jinko	HT-8258	Tianchen	Glass	N/A

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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(Signatures of the responsible persons) (RT engineer)

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No.	Junction box	Junction box's manufacture	Junction box adhesive	Adhesive manufacturer	Rear cover	Rear cover's manufacturer
	y=2)		MH-3668	Minghao		
			HT906Z	Huitian		
5	JM37xy (x=A, y=A or B or C)	Jiaming	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			TSE382-(W/B/C)	Momentive		
6	PV-ZH011C-3K PV-ZH011C-3H PV-ZH011C-5	Zhonghuan Sunter	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			GOLOHO-63	Goloho		
			TS-688	Tianchen		
			TS6568	Tianshun		
			JS-606	Zhijiang		
			CV709	CREVO		
			CREVO709	CREVO		
			Sika AS 60 CN	Sika India		
			PV804	DOW CORNING		
			HT-8258	Tianchen		
			SMG533	Baiyun		
			888A	GUIBAO		
			TT600	Datong		
7	FT60xy (x=1 or 2, y=B or D)	Renhe	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			PV8101F	DOW CORNING		
			MH-3668	MingHao		
			GOLOHO63	Goloho		
			TS-688	Tianchen		
			PV-804	DOW CORNING		
			PV-8007	DOW CORNING		
			RTV 3642	Momentive		
			JS-606	Zhijiang		
			888A	GUIBAO		
			KDW1536	KANGDAWEI		
			Novasil SP 5728/S-CA2105	Otto		
			HT8258	tianchen		
			CV709	Crevo		
			SMG533	Baiyun		
8	FT70xy (x = 1, 2, 3 or	Renhe	1527	TONSAN	Glass	N/A

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(See authenticated signature on first page) (CERT engineer)

No.	Junction box	Junction box's manufacture	Junction box adhesive	Adhesive manufacturer	Rear cover	Rear cover's manufacturer
	4, y = B D, F or H)		HT906Z	Huitian		
			PV8101F	DOW CORNING		
			MH-3668	MingHao		
			GOLOHO63	Goloho		
			TS-688	Tianchen		
			PV-804	DOW CORNING		
			PV-8007	DOW CORNING		
			RTV 3642	Momentive		
			JS-606	Zhijiang		
			888A	GUIBAO		
			KDW 1536	KANGDAWEI		
			Novasil SP 5728/S-CA2105	Otto		
			HT8258	tiancheng		
			CV709	Crevo		
			SMG533	Baiyun		
			9661	Huitian		
9	JM07w (w=Blank, L, R, S, 6, 7, 8, 9, 10 or 11)	Jiaming	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			CV709	Crevo		
			JS-606	Zhijiang		
			HT8258	Tianchen		
10	MH2z (z=3 or 4)	Minghe	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			CV709	Crevo		
			HT-8258	Tianchen		
			JS-606	Zhijiang		
11	FT50xy (x=4, 5, 6, 8, 9 or B, y=B, D, F, H or K)	Renhe	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			PV810F PV804 PV-8007	DOW CORNING		
			MH-3668	Minghao		
			GOLOHO63	Goloho		
			TS-688	Tiansheng		
			RTV 3642	Momentive		
			JS-606	Zhijiang		

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(See authenticated signature on first page) (CERT engineer)

No.	Junction box	Junction box's manufacture	Junction box adhesive	Adhesive manufacturer	Rear cover	Rear cover's manufacturer
			888A	Guibao		
			KDW1536	Kandawei		
			CV709	Crevo		
			HT-8258	Tianchen		
			SMG533	Baiyun		
12	TL-BOX022.3-A-2-1xyzF TL-BOX022.3-A-2-2xF TL-BOX022.3-A-2-3xyzF TL-BOX022.3-B-2-1xyzF TL-BOX022.3-B-2-2xF TL-BOX022.3-B-2-3xyzF	Tongling	1527 HT906Z	TONSAN Huitian	Glass	N/A
13	PVJB-TW-ab (a=2 or 3, b=2or 3)	Tongwei	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			HT8258	Tianchen		
			JS-606	Zhijiang		
14	PV-XT1609Nxyz	Xietong	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			KDW-1536	Kangdawei		
15	TL-BOX022.3-A-2-1xyzF TL-BOX022.3-A-2-2xF TL-BOX022.3-A-2-3xyzF TL-BOX022.3-B-2-1xyzF TL-BOX022.3-B-2-2xF TL-BOX022.3-B-2-3xyzF	Tongling	1527	TONSAN	Glass	N/A
16	PV-ZH011C-5xyz (x = 1 or 2, y = B, z= 2 or 3)	Zhonghuan Sunte	9661	Huitian	Glass	N/A
			JS-606	Zhijiang		
			CREVO709	Sika (Jiangsu)		
			1527	Fuller		
			HT906Z	Huitian		
17	PV-CY21xyz (x=1 or 2 or 3)	Chuangyuan	888A	GUIBAO	Glass	N/A
			1527	TONSAN		
			HT906Z	Huitian		

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

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No.	Junction box	Junction box's manufacture	Junction box adhesive	Adhesive manufacturer	Rear cover	Rear cover's manufacturer
			CV709	Sika (Jiangsu)		
18	PV-ZH001	Zhonghuan Sunter	HT906Z	Huitian	Glass	N/A
			HT-8258	Tianchen		
19	TW-OSPVJB01-ab	Tongwei	HT906Z	Huitian	Glass	N/A
			HT-8258	Tianchen		
20	PV-ZH01A	Zhonghuan Sunter	1527	TONSAN	Glass	N/A
			HT906Z	Huitian		
			GOLOHO-63	Goloho		
			TS-688	Tianchen		
			TS6568	Tianshun		
			JS-606	Zhijiang		
			CV709	CREVO		
			CREVO709	CREVO		
			Sika AS 60 CN	Sika India		
			PV804	DOW CORNING		
			HT-8258	Tianchen		
			SMG533	Baiyun		
			888A	GUIBAO		
			TT600	Datong		

4.4 Combination between encapsulant, LRF an rear cover

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Signatures of the TÜV NORD CERT engineer)

See authenticated
signature on first page

No.	LRF	LRF's manufacture	Rear cover	Encapsulant (front side)	Encapsulant(back side)	Encapsulant's manufacturer
1	BC81	Heyu	Semi tempered glass	N/A	F406P TWET01	First Tongwei
					S201MT1 TWET02	HIUV Tongwei
					SV-15296P TWET03	Sveck Tongwei
					EVA9110T TWET04	3M Tongwei
					B601HP TWET05	Betterial Tongwei
					EP304 TWPET01	First Tongwei
					CO-556 TWPET03	Sveck Tongwei
					TF4 TWPT01	First Tongwei
					PO8110/8110 TWPT04	3M Tongwei
2	SR-RL120MJX	Sunrui	Semi tempered glass	N/A	F406P TWET01	First Tongwei
					S201MT1 TWET02	HIUV Tongwei
					EVA9110T TWET04	3M Tongwei
					SV-15296P TWET03	Sveck Tongwei
					B601HP TWET05	Betterial Tongwei
					EP304 TWPET01	First Tongwei
					CO-556 TWPET03	Sveck Tongwei
					TF4 TWPT01	First Tongwei
					PO8110/8110 TWPT04	3M Tongwei
3	SVK-JX02	Sveck	Semi tempered glass	N/A	F406P TWET01	First Tongwei
					S201MT1 TWET02	HIUV Tongwei
					EVA9110T TWET04	3M Tongwei

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(Signatures of the TÜV NORD CERT engineer)

See authenticated
signature on first page

					SV-15296P TWET03	Sveck Tongwei
					B601HP TWET05	Betterial Tongwei
					EP304 TWPET01	First Tongwei
					CO-556 TWPET03	Sveck Tongwei
					TF4 TWPT01	First Tongwei
					PO8110/8110 TWPT04	3M Tongwei
4	JX-05	TonyShare	Semi tempered glass	N/A	F406P TWET01	First Tongwei
					S201MT1 TWET02	HIUV Tongwei
					SV-15296P TWET03	Sveck Tongwei
					EVA9110T TWET04	3M Tongwei
					B601HP TWET05	Betterial Tongwei
					EP304 TWPET01	First Tongwei
					CO-556 TWPET03	Sveck Tongwei
					TF4 TWPT01	First Tongwei
					PO8110/8110 TWPT04	3M Tongwei
5	WM800	Heyu	Semi tempered glass	N/A	SV-15296P TWET03	Sveck Tongwei
					F406P TWET01	First Tongwei
					S201MT1 TWET02	HIUV Tongwei
					EVA9110T TWET04	3M Tongwei
					B601HP TWET05	Betterial Tongwei
					EP304 TWPET01	First Tongwei
					CO-556 TWPET03	Sveck Tongwei

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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					TF4 TWPT01	First Tongwei
					PO8110/8110 TWPT04	3M Tongwei
6	SVK-JX01W	Sveck	Semi tempered glass	N/A	SV-15296P TWET03	Sveck Tongwei
					F406P TWET01	First Tongwei
					S201MT1 TWET02	HIUV Tongwei
					EVA9110T TWET04	3M Tongwei
					B601HP TWET05	Betterial Tongwei
					EP304 TWPET01	First Tongwei
					CO-556 TWPET03	Sveck Tongwei
					TF4 TWPT01	First Tongwei
					PO8110/8110 TWPT04	3M Tongwei
7	JX-07	TonyShare	Semi tempered glass	N/A	F406P TWET01	First Tongwei
					S201MT1 TWET02	HIUV Tongwei
					SV-15296P TWET03	Sveck Tongwei
					EVA9110T TWET04	3M Tongwei
					B601HP TWET05	Betterial Tongwei
					EP304 TWPET01	First Tongwei
					CO-556 TWPET03	Sveck Tongwei
					TF4 TWPT01	First Tongwei
					PO8110/8110 TWPT04	3M Tongwei
8	ET70RX-7	Exciton	Semi tempered glass	N/A	EP304 TWPET01	First Tongwei
					F406P TWET01	First Tongwei

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(Signatures of TÜV NORD CERT engineer)

See authenticated
signature on first page

					S201MT1 TWET02	HIUV Tongwei
					SV-15296P TWET03	Sveck Tongwei
					EVA9110T TWET04	3M Tongwei
					B601HP TWET05	Betterial Tongwei
					CO-556 TWPET03	Sveck Tongwei
					TF4 TWPT01	First Tongwei
					PO8110/8110 TWPT04	3M Tongwei
9	ET110RX-T	Exciton	AR Coating semi tempered Glass (front cover)	P507C2	N/A	HIUV
10	YKC-125	YKC	Semi tempered glass	N/A	F406P TWET01	First Tongwei
					S201MT1 TWET02	HIUV Tongwei
					SV-15296P TWET03	Sveck Tongwei
					EVA9110T TWET04	3M Tongwei
					B601HP TWET05	Betterial Tongwei
					EP304 TWPET01	First Tongwei
					CO-556 TWPET03	Sveck Tongwei
					TF4 TWPT01	First Tongwei
					PO8110/8110 TWPT04	3M Tongwei

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

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Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

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Version 1.1

4.5 Combination between encapsulant and encapsulant film

No.	Encapsulant film	Encapsulant film manufacturer	Location	Encapsulant material i	Encapsulant material ii	Encapsulant's manufacturer
1	CF15	First	Between solar cell and encapsulant material	EP304 TWPET01	EP304 TWPET01	First Tongwei
			Between solar cell and linter-string connection	EP304DC	EP308	First
2	SF-236	Sveck	Between solar cell and linter-string connection	CO-557	CO-557	Sveck
3	S201MT3	HIUV	Between solar cell and linter-string connection	P507 TWPET02 B602M TWPET05	P507 TWPET02 B602M TWPET05	HIUV Tongwei Betterial Tongwei
4	B601HP	Betterial	Between solar cell and linter-string connection	B602M TWPET05 P507 TWPET02	B602M TWPET05 P507 TWPET02	Betterial Tongwei HIUV Tongwei

4.6 Combination between encapsulant and encapsulant insulation tape

No.	Encapsulant insulation tape	Encapsulant insulation tape manufacturer	Location	Encapsulant material i	Encapsulant material ii	Encapsulant's manufacturer
1	F406P	First	Corners, edges, mounting holes, etc.	EP304 TWPET01	EP304 TWPET01	First Tongwei
2	SV-15296P	Sveck	Corners, edges, mounting holes, etc.	CO-556 TWPET03	CO-556 TWPET03	Sveck
3	S201MT1	HIUV	Corners, edges, mounting holes, etc.	P507 TWPET02	P507 TWPET02	HIUV Tongwei
4	B601HP	Betterial	Corners, edges, mounting holes, etc.	B602M TWPET05	B602M TWPET05	Betterial Tongwei

Remark

- (1) The above module types and raw materials are suitable for modules operating at 98th percentile module operating temperature of 70°C or less.
- (2) ① Fire test Class A according to UL790 has been evaluated on the following materials.

Raw material	Type	Manufacturer
Front sheet	AR Coating semi tempered glass	Tongwei Solar (Hefei) Co., Ltd. (Thickness = 2.0 mm/1.6mm) OEM: Flat Glass Group Co., Ltd.

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(Signatures of TÜV NORD CERT engineer)

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signature on first page

		Anhui Flat Solar Glass Co. Ltd. Zhejiang Jiafu Glass Co. Ltd. Flat (Nantong) Solar Glass Co. Ltd. (Thickness = 2.0 mm/1.6mm) Wujun Chongqing Solar Co., Ltd. (Thickness = 2.0 mm) XINYI PV GLASS HOLDING (ANHUI) LTD. (Thickness = 2.0 mm) Heyou Chongqing Solar Energy Co., Ltd. (Thickness = 2.0 mm) CNBM TONGCHENG New Energy Materials Co., Ltd. (China building materials Tong Cheng new energy materials co., Ltd) Anhui Shengshi New Energy Materials Technology Co., Ltd. CNBM(YIXING) New Energy Resources Co., Ltd. CNBM(HEFEI) New Energy Resources Co., Ltd. Triumph (Zigong) New Energy Resources Co., Ltd. TG Fujian Photovoltaic Glass Co., Ltd. Shuyang Xinda New Material Co. Ltd. (Thickness = 2.0 mm)
Encapsulation system	TF4(both side)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.
	TWPT01	Tongwei Solar (Hefei) Co., Ltd. OEM: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.
	EP304 (front side) +F406P (rear side)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.
	TWPET01 (front side) +TWET01 (rear side)	Tongwei Solar (Hefei) Co., Ltd. OEM: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.
	F406P (both side)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Signed by TÜV NORD CERT engineer)

See authenticated
signature on first page

	TWET01 (both side)	Tongwei Solar (Hefei) Co., Ltd. OEM: Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.
	P507 (EPE front side) +S201MT1 (rear side)	Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd.
	TWPET02 (EPE front side) +TWET02(rear side)	Tongwei Solar (Hefei) Co., Ltd. OEM: Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd.
	S201MT1(both side)	Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd.
	TWET02 (both side)	Tongwei Solar (Hefei) Co., Ltd. OEM: Shanghai HIUV New Materials Co., Ltd. Chengdu HIUV New Material Technology Co., Ltd.
	EP304 (front side) +F806W (rear side)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.
	TWPET01 (front side) + TWEW01 (rear side)	Tongwei Solar (Hefei) Co., Ltd.
	EP304 (front side) +F806WH (rear side)	Hangzhou First PV Material Co., Ltd. Hangzhou First Applied Material Co., Ltd. First (Chuzhou) Advanced Material Co., Ltd.
	TWPET01 (front side) +TWEB01 (rear side)	Tongwei Solar (Hefei) Co., Ltd.
Back sheet	Semi tempered glass	Tongwei Solar (Hefei) Co., Ltd. (Thickness = 2.0 mm/1.6mm) OEM: Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd. Zhejiang Jiafu Glass Co. Ltd. Flat (Nantong) Solar Glass Co. Ltd. (Thickness = 2.0 mm/1.6mm) Wujun Chongqing Solar Co., Ltd. (Thickness = 2.0 mm) XINYI PV GLASS HOLDING (ANHUI) LTD. (Thickness = 2.0 mm)

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(Signatures of the TÜV NORD CERT engineer)

See authenticated
signature on first page

		Heyou Chongqing Solar Energy Co., Ltd. (Thickness = 2.0 mm) CNBM TONGCHENG New Energy Materials Co., Ltd. (China building materials Tong Cheng new energy materials co., Ltd) Anhui Shengshi New Energy Materials Technology Co., Ltd. CNBM(YIXING) New Energy Resources Co., Ltd. CNBM(HEFEI) New Energy Resources Co., Ltd. Triumph (Zigong) New Energy Resources Co., Ltd. TG Fujian Photovoltaic Glass Co., Ltd. Shuyang Xinda New Material Co. Ltd. (Thickness = 2.0 mm)
	Semi tempered glass (white grid)	Tongwei Solar (Hefei) Co., Ltd. (Thickness = 2.0 mm/1.6mm) OEM: Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd. Zhejiang Jiafu Glass Co. Ltd. (Thickness = 2.0 mm/1.6mm) Wujun Chongqing Solar Energy Co., Ltd. (Thickness = 2.0 mm) XINYI PV GLASS HOLDING (ANHUI) LTD. (Thickness = 2.0 mm)
	Semi tempered glass (black grid)	Tongwei Solar (Hefei) Co., Ltd. (Thickness = 2.0 mm/1.6mm) OEM: Flat Glass Group Co., Ltd. Anhui Flat Solar Glass Co. Ltd. Zhejiang Jiafu Glass Co. Ltd. (Thickness = 2.0 mm/1.6mm)

② Fire test Class C according to UL790 has been evaluated on all the raw materials listed above.

(3) For different installation methods, two rounds of mechanical load tests have been evaluated.

Mounting method		Design load (positive / negative)
4 screws installed (Positive / Negative)	Frame parts 6005-T6 (for PV modules with 8" solar cells)	3600 / 1600 Only for frame parts 6005-T6 with 35mm thickness
	Frame parts 6005-T6	3600 / 1600

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

(Signatures of TÜV NORD CERT engineer)

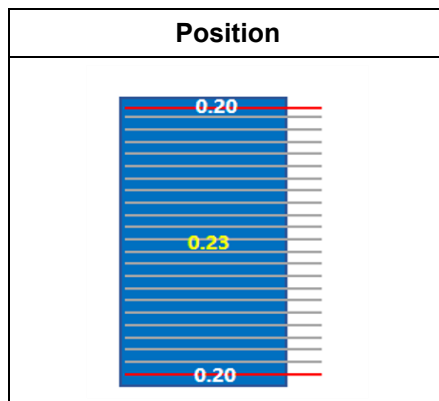
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	(for PV modules with 7" solar cells)	Only for frame parts 6005-T6 with 30mm thickness
8 clamps installed (Positive / Negative)	Frame parts 6005-T6 (for PV modules with 7" and 8" solar cells)	3600 / 1600
	Frame parts 6005-T6 (for PV modules with 7" solar cells)	3600 / 1600 Only for frame parts 6005-T6 with 30mm thickness
4 clamps installed (Positive / Negative)	Frame part 6005-T6 Clamps mounting on 1/4 of the long side (for PV modules with half-cut 7" and 8" solar cells)	3600 / 1600 Only for frame parts 6005-T6 with 35mm or 33mm thickness
	Frame part 6005-T6 Clamps mounting on mounting hole of the long side (for PV modules with half-cut 7" solar cells)	3600 / 1600 Only for frame parts 6005-T6 with 30mm thickness

- (4) Pollution degree 1 (Sequence B1 of IEC / EN 61730-2) has been evaluated on all the raw materials listed above.
- (5) Those materials marked in blue are added in most recent projects.
- (6) The ending letters of module types and corresponding colors are as below:
- (7)

Ending letters of module types	Corresponding colors
HCxxx	Double-glass, double-sided, black module
HWxxx	Double-glass single sided white module
HExxx	Double-glass single-sided black module

- (8) The position of internal wiring (for interconnection cell-to-cell bus bar) ($\Phi = 0.23\text{mm}$ (0.22, 0.24 cover by main type) & $\Phi = 0.20\text{mm}$ (0.18, 0.19, 0.21 cover by main type)) in the cell as below:



----- End of CDF -----

Confirmation of the applicant
Chengdu, 2026-04-13 (Place and date)

(Applicant's legally authorized signature and stamp)

Confirmation of TÜV NORD CERT
Shanghai, 2026-04-13 (Place and date)

(Signatures of TÜV NORD CERT engineer)

See authenticated
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