


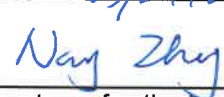
CDF (Constructional Data Form) for Electrical Products

Applicant.....:	Jolywood (Taizhou) Solar Technology Co., Ltd. Kaiyang Rd. Jiangyan Economic Development Zone Taizhou City, Jiangsu Province, 225500, P.R. China
Manufacturer 1.....:	Jolywood (Taizhou) Solar Technology Co., Ltd. Kaiyang Rd. Jiangyan Economic Development Zone Taizhou City, Jiangsu Province, 225500, P.R. China
Manufacturer 2.....:	FENGYANG JOY ENERGY TECHNOLOGY CO., LTD 88 East Yongqing Road, Economic Development Zone, Fengyang County, 233100 Chuzhou City, Anhui Province, P.R. China
Product.....:	Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
Standard(s).....:	IEC / EN 61215-1:2016; IEC / EN 61215-1-1:2016; IEC 61215-2:2016 / EN 61215-2:2017 + AC:2017 + AC:2018; IEC 61730-1:2016 / EN IEC 61730-1:2018 + AC:2018; IEC 61730-2:2016 / EN IEC 61730-2:2018 + AC:2018.
Trade mark.....:	
Module type(s).....:	Double Glass PV Modules with 157.35mm to 158.75mm Mono n-type Bifacial Solar Cells: 72 cells: JW-D72N-xxx (xxx=365-410, in steps of 5) 60 cells: JW-D60N-xxx (xxx=305-340, in steps of 5) Double Glass PV Modules with 158.75mm Half-cut Mono n-type Bifacial Solar Cells: 156 cells: JW-HD156N-xxx (xxx=425-455, in steps of 5) 144 cells: JW-HD144N-xxx (xxx=390-420, in steps of 5) 120 cells: JW-HD120N-xxx (xxx=325-350, in steps of 5) Double Glass PV Modules with 158.75mm Half-cut Mono p-type Bifacial Solar Cells: 156 cells: JW-HD156P-xxx (xxx=425-450, in steps of 5) 144 cells: JW-HD144P-xxx (xxx=390-415, in steps of 5) 120 cells: JW-HD120P-xxx (xxx=325-345, in steps of 5) Double Glass PV Modules with 166mm Half-cut Mono n-type Bifacial Solar Cells: 144 cells: JW-HD144N-xxx (xxx=430-470, in steps of 5) 120 cells: JW-HD120N-xxx (xxx=360-390, in steps of 5) Double Glass PV Modules with 166mm Half-cut Mono p-type Bifacial Solar Cells: 144 cells: JW-HD144P-xxx (xxx=430-450, in steps of 5)

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	<p>120 cells: JW-HD120P-xxx (xxx=360-375, in steps of 5)</p> <p>Double Glass PV Modules with 182mm Half-cut Mono n-type Bifacial Solar Cells:</p> <p>156 cells: JW-HD156N-xxx (xxx=580-630, in steps of 5)</p> <p>144 cells: JW-HD144N-xxx (xxx=525-585, in steps of 5)</p> <p>120 cells: JW-HD120N-xxx (xxx=435-485, in steps of 5)</p> <p>132 cells: JW-HD132N-xxx (xxx=485-535, in steps of 5)</p> <p>108 cells: JW-HD108N-xxx (xxx=395-435, in steps of 5)</p> <p>Double Glass PV Modules with 182mm Half-cut Mono p-type Bifacial Solar Cells:</p> <p>144 cells: JW-HD144P-xxx (xxx=525-555, in steps of 5)</p> <p>120 cells: JW-HD120P-xxx (xxx=435-460, in steps of 5)</p> <p>132 cells: JW-HD132P-xxx (xxx=485-505, in steps of 5)</p> <p>108 cells: JW-HD108P-xxx (xxx=395-415, in steps of 5)</p> <p>Double Glass PV Modules with 210mm Half-cut Mono n-type Bifacial Solar Cells:</p> <p>120 cells: JW-HD120N-xxx (xxx=580-620, in steps of 5)</p> <p>132 cells: JW-HD132N-xxx (xxx=655-680, in steps of 5)</p> <p>Double Glass PV Modules with 210mm Half-cut Mono p-type Bifacial Solar Cells:</p> <p>120 cells: JW-HD120P-xxx (xxx=580-610, in steps of 5)</p> <p>Remark: xxx indicates output power from the front side only</p>
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Electrical ratings:

Double Glass PV Modules with 157.35mm to 158.75mm Mono n-type Bifacial Solar Cells:

Module type.....	72 cells: JW-D72N-xxx (xxx=365-385, in steps of 5) For Mono cell 1		
Dimensions [mm] / l x w x h.....	1974 x 992 x 6 (without frame) 1980 x 998 x 40 / 30 (with frame)		
Rated Pmpp [W].....	365, 370, 375, 380, 385	Tolerance of rated Pmpp [W].....	±3
Rated Voc [V].....	48.5, 48.8, 49.1, 49.5, 49.8	Tolerance of rated Voc [%].....	±4
Rated Isc [A]	9.78, 9.84, 9.88, 9.93, 9.98	Tolerance of rated Isc [%].....	±5
Maximum system voltage [V].....	1500	Safety class acc. to IEC 61140.....	Class II
Min-creepage distance [mm].....	16	Fuse rating [A].....	20
Design load [Pa] / front.....	3600 without frame 3600 or 1600 with frame	Safety factor / front.....	1.5
Design load [Pa] / back.....	1600	Safety factor / back.....	1.5

Module type.....	60 cells: JW-D60N-xxx (xxx=305-320, in steps of 5)
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	For Mono cell 1		
Dimensions [mm] / l x w x h..... :	1658 x 992 x 6 (without frame) 1664 x 998 x 40 / 30 (with frame)		
Rated Pmpp [W]..... :	305, 310, 315, 320,	Tolerance of rated Pmpp [W]..... :	±3
Rated Voc [V]..... :	39.5, 40.0, 40.5, 41.1	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A] :	9.83, 9.86, 9.89, 9.92	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	16	Fuse rating [A]..... :	20
Design load [Pa] / front..... :	3600 without frame 3600 or 1600 with frame	Safety factor / front..... :	1.5
Design load [Pa] / back..... :	1600	Safety factor / back..... :	1.5

Module type..... :	72 cells: JW-D72N-xxx (xxx=390-410, in steps of 5) For Mono cell 2: power range = 390-410 For Mono cell 3: power range = 390-405		
Dimensions [mm] / l x w x h..... :	Size 1: 2004 x 1008 x 40 / 30 (with frame); 1998 x 1002 x 6 (without frame) Size 2: 1992 x 996 x40 / 30 (with frame) 1986 x 990 x6 (without frame)		
Rated Pmpp [W]..... :	390, 395, 400, 405, 410	Tolerance of rated Pmpp [W]..... :	±3
Rated Voc [V]..... :	49.2, 49.5, 49.8, 50.1, 50.4	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A] :	10.02, 10.08, 10.14, 10.19, 10.24	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	Size 1: 16.0 Size 2: 12.5	Fuse rating [A]..... :	20
Design load [Pa] / front..... :	3600 without frame 3600 or 1600 with frame	Safety factor / front..... :	1.5
Design load [Pa] / back..... :	1600	Safety factor / back..... :	1.5

Module type..... :	60 cells: JW-D60N-xxx (xxx=325-340, in steps of 5) For Mono cell 2&3		
Dimensions [mm] / l x w x h..... :	Size 1: 1684 x 1008 x 40 / 30 (with frame) 1678 x 1002 x 6 (without frame)		

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	Size 2: 1670 x 996 x 40 / 30 (with frame) 1664 x 990 x 6 (without frame)		
Rated Pmpp [W]..... :	325, 330, 335, 340	Tolerance of rated Pmpp [W]..... :	±3
Rated Voc [V]..... :	41.0, 41.2, 41.5, 41.8	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	10.01, 10.07, 10.12, 10.17	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	Size 1: 16.0 Size 2: 12.5	Fuse rating [A]..... :	20
Design load [Pa] / front..... :	3600 without frame 3600 or 1600 with frame	Safety factor / front..... :	1.5
Design load [Pa] / back..... :	1600	Safety factor / back..... :	1.5

Double Glass PV Modules with 158.75mm Half-cut Mono n-type Bifacial Solar Cells:

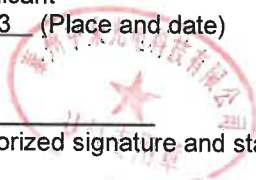
Module type..... :	156 cells: JW-HD156N-xxx (xxx=425-455, in steps of 5) For Mono cell 4: power range = 425-455; For Mono cell 5: power range = 425-450;		
Dimensions [mm] / l x w x h..... :	2174 x 990 x 6 (without frame) 2180 x 996 x 30 / 40 (with frame)		
Rated Pmpp [W]..... :	425, 430, 435, 440, 445, 450, 455	Tolerance of rated Pmpp [W]..... :	±3
Rated Voc [V]..... :	53.2, 53.5, 53.8, 54.1, 54.4, 54.7, 54.9	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	10.01, 10.06, 10.12, 10.17, 10.22, 10.28, 10.34	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	12.5	Fuse rating [A]..... :	20
Design load [Pa] / front..... :	3600 without frame 3600 or 1600 with frame	Safety factor / front..... :	1.5
Design load [Pa] / back..... :	1600	Safety factor / back..... :	1.5

Module type..... :	144 cells: JW-HD144N-xxx (xxx=390-420, in steps of 5) For Mono cell 4: power range = 390-420; For Mono cell 5: power range = 390-415;		
Dimensions [mm] / l x w x h..... :	Size 1: 2030 x 1002 x 6 (without frame) 2036 x 1008 x 40 / 30 (with frame)		

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	Size 2: 2010 x 990 x 6 (without frame) 2016 x 996 x 40 / 30 (with frame)		
Rated Pmpp [W]..... :	390, 395, 400, 405, 410, 415, 420	Tolerance of rated Pmpp [W]..... :	±3
Rated Voc [V]..... :	49.2, 49.5, 49.8, 50.1, 50.4, 50.7, 51.0	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	10.02, 10.08, 10.14, 10.19, 10.24, 10.29, 10.34	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	Size 1: 16.0 Size 2: 12.5	Fuse rating [A]..... :	20
Design load [Pa] / front..... :	3600 without frame 3600 or 1600 with frame	Safety factor / front..... :	1.5
Design load [Pa] / back..... :	1600	Safety factor / back..... :	1.5

Module type..... :	120 cells: JW-HD120N-xxx (xxx=325-350, in steps of 5) For Mono cell 4: power range = 325-350; For Mono cell 5: power range = 325-345;		
Dimensions [mm] / l x w x h..... :	Size 1: 1704 x 1002 x 6 (without frame) 1710 x 1008 x 40 / 30 (with frame) Size 2: 1684 x 990 x 6 (without frame) 1690 x 996 x 40 / 30 (with frame)		
Rated Pmpp [W]..... :	325, 330, 335, 340, 345, 350	Tolerance of rated Pmpp [W]..... :	±3
Rated Voc [V]..... :	41.0, 41.2, 41.5, 41.8, 42.1, 42.4	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	10.01, 10.07, 10.12, 10.17, 10.22, 10.28	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. To IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	Size 1: 16.0 Size 2: 12.5	Fuse rating [A]..... :	20
Design load [Pa] / front..... :	3600 without frame 3600 or 1600 with frame	Safety factor / front..... :	1.5
Design load [Pa] / back..... :	1600	Safety factor / back..... :	1.5

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Double Glass PV Modules with 158.75mm Half-cut Mono p-type Bifacial Solar Cells:

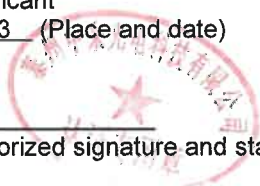
Module type.....	156 cells: JW-HD156P-xxx (xxx=425-450, in steps of 5) For Mono cell 6, power range = 425-445 For Mono cell 7, power range = 425-445		
Dimensions [mm] / l x w x h.....	2174 x 990 x 6 (without frame) 2180 x 996 x 30 / 40 (with frame)		
Rated Pmpp [W].....	425, 430, 435, 440, 445, 450	Tolerance of rated Pmpp [W].....	±3
Rated Voc [V].....	52.4, 52.7, 52.9, 53.1, 53.3, 53.5	Tolerance of rated Voc [%].....	±4
Rated Isc [A]	10.14, 10.22, 10.30, 10.38, 10.45, 10.52	Tolerance of rated Isc [%].....	±5
Maximum system voltage [V].....	1500	Safety class acc. to IEC 61140.....	Class II
Min-creepage distance [mm].....	12.5	Fuse rating [A].....	20
Design load [Pa] / front.....	3600 without frame 3600 or 1600 with frame	Safety factor / front.....	1.5
Design load [Pa] / back.....	1600	Safety factor / back.....	1.5

Module type.....	144 cells: JW-HD144P-xxx (xxx=390-415, in steps of 5) For Mono cell 6,, power range = 390-415 For Mono cell 7, power range = 390-410		
Dimensions [mm] / l x w x h.....	Size 1: 2030 x 1002 x 6 (without frame) 2036 x 1008 x 40 / 30 (with frame) Size 2: 2010 x 990 x 6 (without frame) 2016 x 996 x 40 / 30 (with frame)		
Rated Pmpp [W].....	390, 395, 400, 405, 410, 415	Tolerance of rated Pmpp [W].....	±3
Rated Voc [V].....	48.4, 48.6, 48.8, 49.0 , 49.2, 49.4	Tolerance of rated Voc [%].....	±4
Rated Isc [A]	10.14, 10.22, 10.30, 10.38, 10.45, 10.52	Tolerance of rated Isc [%].....	±5
Maximum system voltage [V].....	1500	Safety class acc. to IEC 61140.....	Class II
Min-creepage distance [mm].....	Size 1: 16.0 Size 2: 12.5	Fuse rating [A].....	20
Design load [Pa] / front.....	3600 without frame 3600 or 1600 with frame	Safety factor / front.....	1.5
Design load [Pa] / back.....	1600	Safety factor / back.....	1.5

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Module type.....	120 cells: JW-HD120P-xxx (xxx=325-345, in steps of 5) For Mono cell 6, power range = 325-345 For Mono cell 7, power range = 325-340		
Dimensions [mm] / l x w x h.....	Size 1: 1704 x 1002 x 6 (without frame) 1710 x 1008 x 40 / 30 (with frame) Size 2: 1684 x 990 x 6 (without frame) 1690 x 996 x40 / 30 (with frame)		
Rated Pmpp [W].....	325, 330, 335, 340, 345	Tolerance of rated Pmpp [W].....	±3
Rated Voc [V].....	40.4, 40.6, 40.8, 41.0 , 41.2	Tolerance of rated Voc [%].....	±4
Rated Isc [A]	10.14, 10.22, 10.30, 10.38, 10.47	Tolerance of rated Isc [%].....	±5
Maximum system voltage [V].....	1500	Safety class acc. To IEC 61140.....	Class II
Min-creepage distance [mm].....	Size 1: 16.0 Size 2: 12.5	Fuse rating [A].....	20
Design load [Pa] / front.....	3600 without frame 3600 or 1600 with frame	Safety factor / front.....	1.5
Design load [Pa] / back.....	1600	Safety factor / back.....	1.5


Double Glass PV Modules with 166mm Half-cut Mono n-type Bifacial Solar Cells:

Module type.....	144 cells: JW-HD144N-xxx (xxx=430-470, in steps of 5) For Mono cell 8		
Dimensions [mm] / l x w x h.....	2105 x 1040 x 6; 2089 x 1033 x 6; (without frame) 2108 x 1042 x 30; 2111 x 1046 x 30 / 35; 2095 x 1039 x 30 / 35; 2108 x 1042 x 30 / 26; 2111 x 1046 x 30 / 26; 2095 x 1033 x 30 / 26;		
Rated Pmpp [W].....	430; 435; 440; 445; 450; 455; 460; 465; 470	Tolerance of rated Pmpp [%].....	±3
Rated Voc [V].....	49.2; 49.4; 49.6; 49.8; 50.0; 50.2; 50.4; 50.6; 50.8	Tolerance of rated Voc [%].....	±4
Rated Isc [A]	11.15; 11.22; 11.29; 11.36; 11.43; 11.50; 11.56; 11.62; 11.69	Tolerance of rated Isc [%].....	±5
Maximum system voltage [V].....	1500	Safety class acc. to IEC 61140.....	Class II
Min-creepage distance [mm].....	11.5	Fuse rating [A].....	30
Design load (positive) [Pa]	3600 without frame 3600 or 1600 with frame	Safety factor (positive).....	1.5

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Design load (negative) [Pa]..... :	1600	Safety factor (negative)..... :	1.5
Module type..... :	120 cells: JW-HD120N-xxx (xxx=360-390, in steps of 5) For Mono cell 8		
Dimensions [mm] / l x w x h..... :	1767 x 1040 x 6; 1750 x 1033 x 6; (without frame) 1768 x 1042 x 30/26; 1773 x 1046 x 30/35/26; 1756 x 1039 x 30/35/26; 1768 x 1042 x 30/26; 1773 x 1046 x 30/26; 1756 x 1033 x 30/26;		
Rated Pmpp [W]..... :	360; 365; 370; 375; 380; 385; 390	Tolerance of rated Pmpp [%]..... :	±3
Rated Voc [V]..... :	41.0; 41.2; 41.4; 41.6; 41.8; 42.0; 42.2	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	11.18; 11.27; 11.36; 11.45; 11.54; 11.62; 11.69	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	11.5	Fuse rating [A]..... :	30
Design load (positive) [Pa]	3600 without frame 3600 or 1600 with frame	Safety factor (positive)..... :	1.5
Design load (negative) [Pa]..... :	1600	Safety factor (negative)..... :	1.5

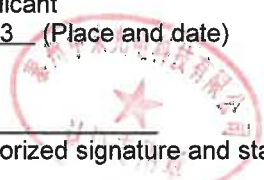
Double Glass PV Modules with 166mm Half-cut Mono p-type Bifacial Solar Cells:

Module type..... :	144 cells: JW-HD144P-xxx (xxx=430-450, in steps of 5) For Mono cell 9,10		
Dimensions [mm] / l x w x h..... :	2105 x 1040 x 6; 2089 x 1033 x 6; (without frame) 2108 x 1042 x 30; 2111 x 1046 x 30/35; 2095 x 1039 x 30/35; 2108 x 1042 x 30/26; 2111 x 1046 x 30/26; 2095 x 1033 x 30/26;		
Rated Pmpp [W]..... :	430; 435; 440; 445; 450	Tolerance of rated Pmpp [%]..... :	±3
Rated Voc [V]..... :	48.8; 49.0; 49.2; 49.4; 49.6	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	11.18; 11.26; 11.34; 11.42; 11.50	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	11.5	Fuse rating [A]..... :	30
Design load (positive) [Pa]	3600 without frame 3600 or 1600 with frame	Safety factor (positive)..... :	1.5
Design load (negative) [Pa]..... :	1600	Safety factor (negative)..... :	1.5

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Module type.....	120 cells: JW-HD120P-xxx (xxx=360-375, in steps of 5) For Mono cell 9,10		
Dimensions [mm] / l x w x h.....	1767 x 1040 x 6; 1750 x 1033 x 6 (without frame); 1768 x 1042 x 30/26; 1773 x 1046 x 30/35/26; 1756 x 1039 x 30/35/26; 1768 x 1042 x 30/26; 1773 x 1046 x 30/26; 1756 x 1033 x 30/26		
Rated Pmpp [W].....	360; 365; 370; 375	Tolerance of rated Pmpp [%].....	±3
Rated Voc [V].....	40.9; 41.1; 41.3; 41.5	Tolerance of rated Voc [%].....	±4
Rated Isc [A]	11.21; 11.29; 11.38; 11.46	Tolerance of rated Isc [%].....	±5
Maximum system voltage [V].....	1500	Safety class acc. to IEC 61140.....	Class II
Min-creepage distance [mm].....	11.5	Fuse rating [A].....	30
Design load (positive) [Pa]	3600 without frame 3600 or 1600 with frame	Safety factor (positive).....	1.5
Design load (negative) [Pa].....	1600	Safety factor (negative).....	1.5

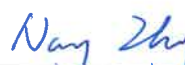
Double Glass PV Modules with 182mm Half-cut Mono p-type Bifacial Solar Cells:

Module type.....	144 cells: JW-HD144P-xxx (xxx=525-555, in steps of 5) For Mono cell 11, power range = 525-545 For Mono cell 12, power range = 525-555 For Mono cell 13, power range = 525-550		
Dimensions [mm] / l x w x h.....	2256 x 1133 x 35/30; 2285 x 1134 x 35/30; 2278 x 1134 x 35/30; Aluminium-Magnesium-Zinc (Al-Mg-Zn) frame: 2256 x 1133 x 30; 2285 x 1134 x 30 ; 2278 x 1134 x 30		
Rated Pmpp [W].....	525; 530; 535; 540; 545; 550; 555	Tolerance of rated Pmpp [%].....	±3
Rated Voc [V].....	48.8; 49.0; 49.2; 49.4; 49.6; 49.8; 50.0	Tolerance of rated Voc [%].....	±4
Rated Isc [A]	13.68; 13.74; 13.80; 13.86; 13.92; 13.98; 14.04	Tolerance of rated Isc [%].....	±5
Maximum system voltage [V].....	1500	Safety class acc. to IEC 61140.....	Class II
Min-creepage distance [mm].....	11.5	Fuse rating [A].....	30
Design load (positive) [Pa]	3600/2400/1600	Safety factor (positive).....	1.5
Design load (negative) [Pa].....	1600	Safety factor (negative).....	1.5

Module type.....	120 cells: JW-HD120P-xxx (xxx=435-460, in steps of 5) For Mono cell 11, power range = 435-450		
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	For Mono cell 12, power range = 435-460 For Mono cell 13, power range = 435-455		
Dimensions [mm] / l x w x h.....:	2256 x 1133 x 35/30; 2285 x 1134 x 35/30; 2278 x 1134 x 35/30; Aluminium-Magnesium-Zinc (Al-Mg-Zn) frame: 2256 x 1133 x 30; 2285 x 1134 x 30; 2278 x 1134 x 30		
Rated Pmpp [W].....:	435; 440; 445; 450; 455; 460;	Tolerance of rated Pmpp [%].....:	±3
Rated Voc [V].....:	40.5; 40.7; 40.9; 41.1; 41.3; 41.5	Tolerance of rated Voc [%].....:	±4
Rated Isc [A]	13.66; 13.73; 13.80; 13.86; 13.92; 13.98	Tolerance of rated Isc [%].....:	±5
Maximum system voltage [V].....:	1500	Safety class acc. to IEC 61140.....:	Class II
Min-creepage distance [mm].....:	11.5	Fuse rating [A].....:	30
Design load (positive) [Pa]	3600/2400/1600	Safety factor (positive).....:	1.5
Design load (negative) [Pa].....:	1600	Safety factor (negative).....:	1.5

Module type.....:	132 cells: JW-HD132P-xxx (xxx=485-505, in steps of 5) For Mono cell 11, power range = 485-500 For Mono cell 12, power range = 485-505 For Mono cell 13, power range = 485-505		
Dimensions [mm] / l x w x h.....:	2100 x 1134 x 35/30 Aluminium-Magnesium-Zinc (Al-Mg-Zn) frame: 2100x1134x30		
Rated Pmpp [W].....:	485; 490; 495; 500; 505	Tolerance of rated Pmpp [%].....:	±3
Rated Voc [V].....:	44.9; 45.1; 45.3; 45.5; 45.7	Tolerance of rated Voc [%].....:	±4
Rated Isc [A]	13.73; 13.79; 13.84; 13.90; 13.96	Tolerance of rated Isc [%].....:	±5
Maximum system voltage [V].....:	1500	Safety class acc. to IEC 61140.....:	Class II
Min-creepage distance [mm].....:	11.5	Fuse rating [A].....:	30
Design load (positive) [Pa]	3600/2400/1600	Safety factor (positive).....:	1.5
Design load (negative) [Pa].....:	1600	Safety factor (negative).....:	1.5

Module type.....:	108cells: JW-HD108P-xxx (xxx=395-415, in steps of 5) For Mono cell 11, power range = 395-405 For Mono cell 12, power range = 395-415 For Mono cell 13, power range = 395-410		
Dimensions [mm] / l x w x h.....:	1730 x 1134 x 35/30; 1728 x 1134 x 35/30; 1722 x 1134 x 35/30; Aluminium-Magnesium-Zinc (Al-Mg-Zn) frame: 1730 x 1134 x 30; 1728 x 1134 x 35/30; 1722 x 1134 x 30;		

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Rated Pmpp [W]..... :	395, 400, 405, 410, 415	Tolerance of rated Pmpp [%]..... :	±3
Rated Voc [V]..... :	36.6; 36.8; 37.0; 37.2; 37.4	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	13.72; 13.79; 13.85; 13.91; 13.97	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	11.5	Fuse rating [A]..... :	30
Design load (positive) [Pa]	3600/2400/1600	Safety factor (positive)..... :	1.5
Design load (negative) [Pa]..... :	1600	Safety factor (negative)..... :	1.5

Double Glass PV Modules with 182mm Half-cut Mono n-type Bifacial Solar Cells:

Module type..... :	156 cells: JW-HD156N-xxx (xxx=580-630, in steps of 5) For Mono cell 15, power range = 585-615 For Mono cell 16, power range = 580-620 For Mono cell 17, power range = 580-630 For Mono cell 18, power range = 580-625		
Dimensions [mm] / l x w x h..... :	2470 x 1134 x 30/35; 2465 x 1134 x 30/35; Aluminium-Magnesium-Zinc (Al-Mg-Zn) frame: 2470 x 1134 x 30/35; 2465 x 1134 x 30/35;		
Rated Pmpp [W]..... :	580; 585; 590; 595; 600; 605; 610; 615; 620; 625; 630	Tolerance of rated Pmpp [%]..... :	±3
Rated Voc [V]..... :	53.7; 53.9; 54.1; 54.3; 54.5; 54.7; 54.9; 55.1; 55.2; 55.3; 55.5	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	13.68; 13.74; 13.80; 13.86; 13.92; 13.98; 14.04; 14.10; 14.17; 14.25; 14.31	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	11.2	Fuse rating [A]..... :	30
Design load (positive) [Pa]	3600/2400/1600	Safety factor (positive)..... :	1.5
Design load (negative) [Pa]..... :	1600	Safety factor (negative)..... :	1.5

Module type..... :	144 cells: JW-HD144N-xxx (xxx=525-585, in steps of 5) For Mono cell 14, power range = 525-550; For Mono cell 15, power range = 525-570; For Mono cell 16, power range = 540-575; For Mono cell 17, power range = 540-585; For Mono cell 18, power range = 525-580;		
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Dimensions [mm] / l x w x h..... :	2256 x 1133 x 35/30; 2285 x 1134 x 35/30; 2278 x 1134 x 35/30; Aluminium-Magnesium-Zinc (Al-Mg-Zn) frame: 2256 x 1133 x 30; 2285 x 1134 x 30; 2278 x 1134 x 30;		
Rated Pmpp [W]..... :	525; 530; 535; 540; 545; 550; 555; 560; 565; 570; 575; 580; 585	Tolerance of rated Pmpp [%]..... :	±3
Rated Voc [V]..... :	49.28; 49.48; 49.68; 49.88; 50.08; 50.28; 50.48; 50.68; 50.88; 51.08; 51.28; 51.48; 51.68	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	13.70; 13.76; 13.82; 13.88; 13.94; 14.00; 14.06; 14.12; 14.18; 14.24; 14.30; 14.36; 14.42	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	11.5	Fuse rating [A]..... :	30
Design load (positive) [Pa]	3600/2400/1600	Safety factor (positive)..... :	1.5
Design load (negative) [Pa]..... :	1600	Safety factor (negative)..... :	1.5

Module type..... :	120 cells: JW-HD120N-xxx (xxx=435-485, in steps of 5) For Mono cell 14, power range = 435-455 For Mono cell 15, power range = 435-475 For Mono cell 16, power range = 450-480 For Mono cell 17, power range = 450-485 For Mono cell 18, power range = 435-480		
Dimensions [mm] / l x w x h..... :	1890 x 1133 x 35/30; 1915 x 1134 x 35/30; Aluminium-Magnesium-Zinc (Al-Mg-Zn) frame: 1890 x 1133 x 30; 1915 x 1134 x 30		
Rated Pmpp [W]..... :	435; 440; 445; 450; 455; 460; 465; 470; 475; 480; 485	Tolerance of rated Pmpp [%]..... :	±3
Rated Voc [V]..... :	40.8; 41.0; 41.2; 41.4; 41.6; 41.8; 42.0; 42.2; 42.4; 42.6; 42.8	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	13.54; 13.61; 13.68; 13.75; 13.82; 13.89; 13.96; 14.02; 14.09; 14.16; 14.23	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	11.5	Fuse rating [A]..... :	30

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Design load (positive) [Pa]	3600/2400/1600	Safety factor (positive).....	1.5
Design load (negative) [Pa].....	1600	Safety factor (negative).....	1.5

Module type.....	132 cells: JW-HD132N-xxx (xxx=485-535, in steps of 5) For Mono cell 15, power range = 495-520 For Mono cell 16, power range = 485-525 For Mono cell 17, power range = 495-535 For Mono cell 18, power range = 485-530		
Dimensions [mm] / l x w x h.....	2100x1134x35/30 Aluminium-Magnesium-Zinc (Al-Mg-Zn) frame: 2100x1134x30		
Rated Pmpp [W].....	485; 490; 495; 500; 505; 510; 515; 520; 525; 530; 535	Tolerance of rated Pmpp [%].....	±3
Rated Voc [V].....	45.3; 45.5; 45.7; 45.9; 46.1; 46.3; 46.5; 46.7; 46.9; 47.1; 47.3	Tolerance of rated Voc [%].....	±4
Rated Isc [A]	13.60; 13.66; 13.72; 13.78; 13.84; 13.90; 13.96; 14.02; 14.08; 14.14; 14.20	Tolerance of rated Isc [%].....	±5
Maximum system voltage [V].....	1500	Safety class acc. to IEC 61140.....	Class II
Min-creepage distance [mm].....	11.5	Fuse rating [A].....	30
Design load (positive) [Pa]	3600/2400/1600	Safety factor (positive).....	1.5
Design load (negative) [Pa].....	1600	Safety factor (negative).....	1.5

Module type.....	108 cells: JW-HD108N-xxx (xxx=395-435, in steps of 5) For Mono cell 15, power range = 405-425 For Mono cell 16, power range = 395-430 For Mono cell 17, power range = 405-435 For Mono cell 18, power range = 395-430		
Dimensions [mm] / l x w x h.....	1730 x 1134 x 35/30; 1728 x 1134 x 35/30; 1722 x 1134 x 35/30; Aluminium-Magnesium-Zinc (Al-Mg-Zn) frame: 1730 x 1134 x 30; 1728 x 1134 x 35/30; 1722 x 1134 x 30;		
Rated Pmpp [W].....	395;400;405;410;415;42 0;425;430;435	Tolerance of rated Pmpp [%].....	±3
Rated Voc [V].....	36.9;37.1;37.3;37.5;37.7; 37.9;38.1;38.3;38.4	Tolerance of rated Voc [%].....	±4
Rated Isc [A]	13.59;13.67;13.75;13.82; 13.91;13.98;14.05;14.12; 14.18	Tolerance of rated Isc [%].....	±5
Maximum system voltage [V].....	1500	Safety class acc. to IEC 61140.....	Class II

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Min-creepage distance [mm].....:	11.5	Fuse rating [A].....:	30
Design load (positive) [Pa]	3600/2400/1600	Safety factor (positive).....:	1.5
Design load (negative) [Pa].....:	1600	Safety factor (negative).....:	1.5

Double Glass PV Modules with 210mm Half-cut Mono n-type Bifacial Solar Cells:

Module type.....:	120 cells: JW-HD120N-xxx (xxx=580-620, in steps of 5) For Mono cell 19&20		
Dimensions [mm] / l x w x h.....:	2172 x 1303 x 35		
Rated Pmpp [W].....:	580; 585; 590; 595; 600; 605; 610; 615; 620	Tolerance of rated Pmpp [%].....:	±3
Rated Voc [V].....:	40.5; 40.7; 40.9; 41.1; 41.3; 41.5; 41.7; 41.9; 42.1	Tolerance of rated Voc [%].....:	±4
Rated Isc [A]	18.22; 18.26; 18.31; 18.35; 18.40; 18.45; 18.50; 18.55; 18.60	Tolerance of rated Isc [%].....:	±5
Maximum system voltage [V].....:	1500	Safety class acc. to IEC 61140.....:	Class II
Min-creepage distance [mm].....:	11.8	Fuse rating [A].....:	30
Design load (positive) [Pa]	3600	Safety factor (positive).....:	1.5
Design load (negative) [Pa].....:	1600 / 2400	Safety factor (negative).....:	1.5

Module type.....:	132 cells: JW-HD132N-xxx (xxx=655-680, in steps of 5) For Mono cell 19&20		
Dimensions [mm] / l x w x h.....:	2384 x 1303 x 35		
Rated Pmpp [W].....:	655; 660; 665; 670; 675; 680;	Tolerance of rated Pmpp [%].....:	±3
Rated Voc [V].....:	45.4; 45.6; 45.8; 46.0; 46.2; 46.4	Tolerance of rated Voc [%].....:	±4
Rated Isc [A]	18.37; 18.42; 18.47; 18.52; 18.57; 18.62	Tolerance of rated Isc [%].....:	±5
Maximum system voltage [V].....:	1500	Safety class acc. to IEC 61140.....:	Class II
Min-creepage distance [mm].....:	11.8	Fuse rating [A].....:	30
Design load (positive) [Pa]	3600	Safety factor (positive).....:	1.5
Design load (negative) [Pa].....:	1600 / 2400	Safety factor (negative).....:	1.5

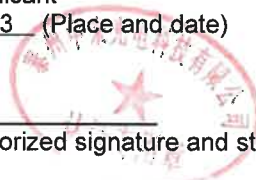
Double Glass PV Modules with 210mm Half-cut Mono p-type Bifacial Solar Cells:

Module type.....:	120 cells: JW-HD120P-xxx (xxx=580-610, in steps of 5) For Mono cell 21		
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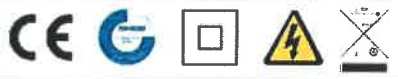
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Dimensions [mm] / l x w x h..... :	2172 x 1303 x 35		
Rated Pmpp [W]..... :	580; 585; 590; 595; 600; 605; 610	Tolerance of rated Pmpp [%]..... :	±3
Rated Voc [V]..... :	40.7; 40.9; 41.1; 41.3; 41.5; 41.7; 41.9	Tolerance of rated Voc [%]..... :	±4
Rated Isc [A]	18.34; 18.39; 18.43; 18.47; 18.52; 18.57; 18.61	Tolerance of rated Isc [%]..... :	±5
Maximum system voltage [V]..... :	1500	Safety class acc. to IEC 61140..... :	Class II
Min-creepage distance [mm]..... :	11.8	Fuse rating [A]..... :	30
Design load (positive) [Pa]	3600	Safety factor (positive)..... :	1.5
Design load (negative) [Pa]..... :	1600 / 2400	Safety factor (negative)..... :	1.5

Copy of marking plate:

		Test Conditions	STC	Power Selection	0~+5W
		Rated Max Power (Pmax TOL±3%)		Maximum Overcurrent Protection Rating	30A
Jolywood (Taizhou) Solar Technology Co.,Ltd.		Current at Pmax (Imp)		Maximum System Voltage	1500V
Model Type		Voltage at Pmax (Vmp)		PV Module Classification	Class II
Product Name	Solar Module	Short-Circuit Current (Isc TOL±5%)			
Address: Kaiyang Rd. Jiangyan Economic Development Zone, Taizhou, Jiangsu, China		Open-Circuit Voltage (Voc TOL±4%)			
		STC: AM=1.5 E=1000W/m² Tc=25°C			
		Model Type	Voltage at Pmax (Vmp)	Maximum overcurrent protection rating	30A
Product Name Solar Module		Test conditions	Current at Pmax (Imp)	Maximum System Voltage	1500V
Jolywood (Taizhou) Solar Technology Co., Ltd.		Rated Max Power (Pmax TOL±3%)	Open-Circuit Voltage (Voc TOL±4%)	PV module classification	Class II
		Power Selection	Short-Circuit Current (Isc TOL±5%)	STC: AM=1.5 E=1000W/m² Tc=25°C	
					
				Address: Kaiyang Rd. Jiangyan Economic Development Zone, Taizhou, Jiangsu, China	
		Test Conditions	STC	Power Selection	0~+5W
		Rated Max Power (Pmax TOL±3%)		Maximum Overcurrent Protection Rating	30A
Jolywood (Taizhou) Solar Technology Co.,Ltd.		Current at Pmax (Imp)		Maximum System Voltage	1500V
Model Type		Voltage at Pmax (Vmp)		PV Module Classification	Class II
Product Name	Solar Module	Short-Circuit Current (Isc TOL±5%)			
Address: Kaiyang Rd. Jiangyan Economic Development Zone, Taizhou, Jiangsu, China		Open-Circuit Voltage (Voc TOL±4%)			
		STC: AM=1.5 E=1000W/m² Tc=25°C			

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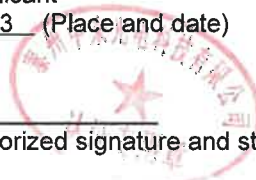
List of critical materials and components:

Object	Manufacturer	Type	Technical Data	Remark
Components				
Mono cell 1 (n-type, whole size) Power range: D72N: 365-385 D60N: 305-320	Jolywood (Taizhou) Solar Technology Co., Ltd.	ZL-NM2+5B-L5 ZL-NM2+5B (5 dotted busbar mono cell)	L x W x T (± %): (157.35x157.35) ± 0.25mm x (170/160±17)µm Φ210.9±0.25mm; Area: 246.21cm ²	Tested with PV modules
Mono cell 2 (n-type, whole size) Power range D72N: 390-410 D60N: 325-340	Jolywood (Taizhou) Solar Technology Co., Ltd.	ZL-NG112B (12 dotted busbar mono cell)	L x W x T (± %): (158.75x158.75) ±0.25mm x (170±20) µm Φ223mm±0.25mm, area: 251.99 cm ²	Tested with PV modules
Mono cell 3 (n-type, whole size) Power range D72N: 390-405 D60N: 325-340	Jolywood (Taizhou) Solar Technology Co., Ltd.	ZL-NM312B (12 dotted busbar mono cell)	L x W x T (± %): (158.75x158.75) ±0.25mm x (170±20) µm Φ211mm±0.25mm, area: 250.15 cm ²	Tested with PV modules
Mono cell 4 (n-type, half-cut) Power range: HD156N: 425-455 HD144N: 390-420 HD120N: 325-350	Jolywood (Taizhou) Solar Technology Co., Ltd.	ZL-NG19B (9 dotted busbar mono cell)	L x W x T (± %): (158.75x79.38) ±0.25mm x (170±17) µm Φ223mm±0.25mm, area: 125.995cm ²	Tested with PV modules
Mono cell 5 (n-type, half-cut) Power range: HD156N: 425-450 HD144N: 390-415 HD120N: 325-345	Jolywood (Taizhou) Solar Technology Co., Ltd.	ZL-NM39B (9 dotted busbar mono cell)	L x W x T (± %): (158.75x79.38) ±0.25mm x (170±20) µm Φ211mm±0.25mm, area: 125.075cm ²	Covered by main tested type
Mono cell 6 (p-type, half-cut) Power range: HD156P: 425-450 HD144P: 390-415 HD120P: 325-345	Tongwei Solar (Chengdu) Co., Ltd.	M1589BPERC (TW1B8W1)	L x W x T (± %): (158.75x79.38) ±0.25mm x (190±30) µm Φ223mm±0.25mm, area: 125.995cm ²	Tested with PV modules
Mono cell 7 (p-type, half-cut) HD156P: 425-445 HD144P: 390-410 HD120P: 325-340	Sumin Renewable Energy Technology Co., Ltd.	158KSMP-0P (9 dotted busbar mono cell)	L x W x T (± %): (158.75x79.38) ±0.25mm x (200±20)µm Φ223mm±0.25mm, area: 125.995cm ²	Tested with PV modules
Mono cell 8 (n-type, half-cut) JW-HD144N:430-470 JW-HD120N:360-390	Jolywood (Taizhou) Solar Technology Co., Ltd.	NM69B (9 dotted busbar mono cell)	L x W x T : (166.0x83.0) ± 0.25mm x (170 ± 17) µm; Φ223mm ± 0.25mm; Area: 137.075cm ²	Tested with PV modules TÜV SÜD 704061930402-02&05&07

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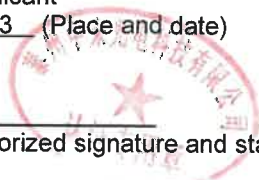
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Object	Manufacturer	Type	Technical Data	Remark
Mono cell 9 (p- type, half-cut) JW-HD144P:430-450 JW-HD120P:360-375	Tongwei Solar (Chengdu) Co., Ltd.	M1669BPERCB P (9 dotted busbar mono cell)	L x W x T : (166.0x83.0) ± 0.25mm x (190 ± 19) µm; Φ223mm ± 0.25mm; Area: 137.075cm ²	Tested with PV modules TÜV SÜD 704061930402-02
Mono cell 10 (p- type, half-cut) JW-HD144P:430-450 JW-HD120P:360-375	Jiangsu Runergy New Energy Technology Co., Ltd.	PM69BF32B2 (9 dotted busbar mono cell)	L x W x T : (166.0x83.0) ± 0.25mm x (175 ± 17.5) µm; Area: 137.075cm ²	Tested with appliance TÜV SÜD 704061930402-09
Mono cell 11 (p- type, half-cut) JW-HD144P:525-545 JW-HD120P:435-450 JW-HD132P:485-500 JW-HD108P:395-405	Jiangsu Runergy New Energy Technology Co., Ltd.	PJ310BF47B2 (9 dotted busbar mono cell)	L x W x T : (182.0x91.0) ± 0.25mm x (175 ± 17.5) µm; Front side: 0.3mm wide bus bars Back side: 1.2mm wide bus bars Area: 165.07cm ²	Tested with PV modules TÜV SÜD 704061930402-04
Mono cell 12 (p- type, half-cut) JW-HD144P:525-555 JW-HD120P:435-460 JW-HD132P:485-505 JW-HD108P:395-415	Jiangsu Runergy New Energy Technology Co., Ltd.	PJ311BF46B2 (11 dotted busbar mono cell)	L x W x T : (182.0x91.0) ± 0.5mm x (175 ± 17.5) µm; Front side: 1.0 mm wide bus bars Back side: 1.0 mm wide bus bars Area: 165.07cm ²	Tested with PV modules TÜV SÜD 704061930402-08
Mono cell 13 (p- type, half-cut) JW-HD144P:525-550 JW-HD120P:435-455 JW-HD132P:485-505 JW-HD108P:395-410	Jiangsu Longheng new energy Co., Ltd.	M18211BBF40 (11 dotted busbar mono cell)	L x W x T : (182.0x91.0) ± 0.5mm x (175 ± 17.5) µm; Area: 165.075cm ²	Tested with PV modules TÜV SÜD 704061930402-09
Mono cell 14 (n- type, half-cut) JW-HD144N:525-550 JW-HD120N:435-455	Jolywood(Taizhou) Solar Technology Co., Ltd.	NM109B (9 dotted busbar mono cell)	L x W x T : (182.0x91.0) ± 0.25mm x (170 ± 17) µm; Area: 165.07cm ²	Tested with PV modules TÜV SÜD 704061930402-03
Mono cell 15 (n- type, half-cut) JW-HD144N:540-570 JW-HD120N:450-475 JW-HD132N:495-520 JW-HD108N:405-425 JW-HD156N:585-615	Jiangsu Runergy New Energy Technology Co., Ltd.	NM1011BF1B3 (11 dotted busbar mono cell)	L x W x T : (182.0x91.0) ± 0.5mm x (165 ± 16.5) µm; Area: 165.07cm ²	Tested with PV modules TÜV SÜD 704061930402-16
Mono cell 16 (n- type, half-cut) JW-HD144N:525-575 JW-HD120N:435-480 JW-HD132N:485-525 JW-HD108N:395-430 JW-HD156N:580-620	Jolywood(Taizhou) Solar Technology Co., Ltd.	NM1011B (11 dotted busbar mono cell)	L x W x T : (182.0x91.0) ± 0.25mm x (170 ± 17) µm; Area: 165.07cm ²	Tested with PV modules TÜV SÜD 704061930402-06, 704061930402-14

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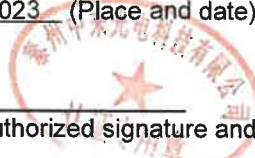
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Object	Manufacturer	Type	Technical Data	Remark
Mono cell 17 (n- type, half-cut) JW-HD144N:540-585 JW-HD120N:450-485 JW-HD132N:495-535 JW-HD108N:405-435 JW-HD156N:585-630	Jolywood(Taizhou) Solar Technology Co., Ltd.	NM1011B-L21 (11 dotted busbar mono cell)	L x W x T : (182.0x91.0) ± 0.25mm x (160 ± 16) µm; Area: 165.07cm ²	Tested with PV modules TÜV SÜD 704061930402-15
Mono cell 18 (n- type, half-cut) JW-HD144N:525-580 JW-HD120N:435-480 JW-HD132N:485-530 JW-HD108N:395-430 JW-HD156N:580-625	Jolywood(Taizhou) Solar Technology Co., Ltd.	NM1016B (16 dotted busbar mono cell)	L x W x T : (182.0x91.0) ± 0.25mm x (140 ± 14) µm; Area: 165.07cm ²	Tested with PV modules TÜV SÜD 704061930402-17
Mono cell 19 (n- type, half-cut) JW-HD120N:580-620 JW-HD132N:655-680	Jolywood(Taizhou) Solar Technology Co., Ltd.	NM1212B (12 dotted busbar mono cell)	L x W x T : (210.0x105.0) ± 0.25mm x (170 ± 17) µm; Area: 220.46cm ²	Tested with PV modules TÜV SÜD 704061930402-10
Mono cell 20 (n- type, half-cut) JW-HD120N:580-620 JW-HD132N:655-680	Tongwei Solar (Meishan) Co., Ltd.	M210CBTCONB P (12 dotted busbar mono cell)	L x W x T : (210.0x105.0) ± 0.25mm x (175 ± 17.5) µm; Area: 220.46cm ²	Tested with PV modules TÜV SÜD 704061930402-14A3 & 15 & 16
Mono cell 21 (p- type, half-cut) JW-HD120P:580-610	Tongwei Solar (Chengdu) Co., Ltd.	M21012BPERC BP (12 dotted busbar mono cell)	L x W x T : (210.0x105.0) ± 0.5mm x (180 ± 18) µm; Area: 220.46cm ²	Tested with PV modules TÜV SÜD 704061930402-10
Front cover 1	Xinyi PV Products (Anhui) Holdings Ltd.	Heat strengthened glass with external AR coating	Thickness = 2.5mm / 2.0mm	Tested with PV modules
Front cover 2	Suolate Special Glass (Jiangsu) Co., Ltd.	Heat strengthened glass with external AR coating	Thickness = 2.5mm / 2.0mm	Tested with PV modules
Front cover 3	Flat Glass Group Co., Ltd.	Heat strengthened glass with external AR coating	Thickness = 2.5mm / 2.0mm	Tested with PV modules
Front cover 4	CAIHONG (HEFEI) PHOTOVOLATIC CO., LTD	Heat strengthened glass with external AR coating	Thickness = 2.0mm	Tested with PV modules TÜV SÜD 704061930402-04

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Object	Manufacturer	Type	Technical Data	Remark
Front cover 5	CHANGZHOU ALMADEN CO.,LTD.	Heat strengthened glass with external AR coating	Thickness = 2.0mm / 1.6mm (1.6mm only suitable for the size smaller than 1730 x 1134)	Tested with PV modules TÜV SÜD 704061930402-10
Front cover 6	Chenzhou Kibing Photovoltaic & Electronic Glass Co., Ltd.	Heat strengthened glass with external AR coating	Thickness = 2.5mm / 2.0mm	Tested with PV modules TÜV SÜD 704061930402-17
Rear cover 1	Xinyi PV Products (Anhui) Holdings Ltd.	Heat strengthened glass	Thickness =2.5mm / 2.0mm	Tested with PV modules
	Xinyi PV Products (Anhui) Holdings Ltd.	Heat strengthened glass with inside white ceramic glaze	Thickness =2.5mm / 2.0mm	Tested with PV modules
Rear cover 2	Suolate Special Glass (Jiangsu) Co., Ltd.	Heat strengthened glass with inside white ceramic glaze	Thickness =2.5mm / 2.0mm	Tested with PV modules
		Heat strengthened glass	Thickness =2.5mm / 2.0mm	Covered by main tested type
Rear cover 3	Flat Glass Group Co., Ltd.	Heat strengthened glass with inside white ceramic glaze	Thickness = 2.5mm / 2.0mm	Tested with PV modules
		Heat strengthened glass	Thickness = 2.5mm / 2.0mm	Covered by main tested type
Rear cover 4	CAIHONG (HEFEI) PHOTOVOLATIC CO., LTD	Heat strengthened glass	Thickness = 2.5mm / 2.0mm	Covered by main tested type TÜV SÜD 704061930402-04
		Heat strengthened glass with inside white ceramic glaze coating	Thickness = 2.0mm	Tested with PV modules TÜV SÜD 704061930402-04
Rear cover 5	CHANGZHOU ALMADEN CO.,LTD.	Heat strengthened glass	Thickness = 2.5mm / 2.0mm /1.6mm (1.6mm only suitable for the size smaller than 1730 x 1134)	Covered by main tested type TÜV SÜD 704061930402-10
		Heat strengthened glass with inside white ceramic glaze coating	Thickness = 2.0mm /1.6mm (1.6mm only suitable for the size smaller than 1730 x 1134)	Tested with PV modules TÜV SÜD 704061930402-10

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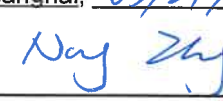

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Object	Manufacturer	Type	Technical Data	Remark
Rear cover 6	Chenzhou Kibing Photovoltaic & Electronic Glass Co., Ltd.	Heat strengthened glass	Thickness = 2.5mm / 2.0mm	Covered by main tested type TÜV SÜD 704061930402-17
		Heat strengthened glass with inside white ceramic glaze coating	Thickness = 2.0mm / 2.5mm	Tested with PV modules TÜV SÜD 704061930402-17
Encapsulation material 1	3M	PO8110 for both side (combine with cell 1-9, 14, 16-19, 21)	POE Thickness = 0.65 (-0.13~0.3)mm CTI = 600 (V)	Tested with PV modules CTI report no. 50114986 001 issued by TÜV Rheinland
Encapsulation material 2	Hangzhou First PV Material Co., Ltd.	TF4(P) (combine with cell 1-12, 14, 16-19, 21)	POE Thickness = 0.45 (-0.09 ~0.35)mm PTI = 600 (V)	Tested with PV modules PTI report no. 15101259 005 issued by TÜV Rheinland
Encapsulation material 3	Changzhou Sveck PV New Material Co., Ltd.	SE-556 (combine with cell 1-9, 14, 16-19, 21)	POE Thickness = 0.45 (-0.09 ~0.35)mm CTI = 600 (V)	Tested with PV modules CTI report no. 70.407.17.118.01-01
Encapsulation material 4	Jolywood (Suzhou) Sunwatt Co., Ltd.	JW P-3 for both side (combine with cell 1-6, 8-21)	POE Thickness = 0.45(-0.05~0.35)mm CTI = 600 (V)	Tested with PV modules TÜV SÜD 704061930402-02 CTI report no.: 70.407.20.066.04-00 issued by TÜV SÜD
Encapsulation material 5	Jiangsu Lushan New Materials Co.ltd Combine With JOLYWOOD	S102 for both side (combine with cell 1-5, 8, 14, 16-19)	POE Thickness = 0.65(-0.13~0.3)mm CTI = 600 (V)	Tested with PV modules TÜV SÜD 704061930402-02 CTI report no.: E344067 issued by UL
Encapsulation material 6	Hangzhou First PV Material Co., Ltd.	F406P (Front side) & TF4(P) (Rear side) (combine with cell 1-5, 8-12, 14, 16-19, 21)	EVA: F406P, POE: TF4(P) Thickness = 0.5 (-0.1 ~0.35)mm F406P: CTI = 600 (V) TF4(P): PTI = 600 (V)	Tested with PV modules 70402210127-01 F406P CTI report no. 15101259 002 issued by TÜV Rheinland
Encapsulation material 7	Jolywood (Suzhou) Sunwatt Co., Ltd.	JW-EVA-01 (Front side) & JW-EPE-01 (Rear side) (combine with cell 1-5, 8-12, 14, 16-19, 21)	EVA: JW-EVA-01, POE: JW-EPE-01 Thickness = 0.5 (-0.1 ~0.35)mm CTI = 600 (V)	Tested with PV modules 70402210127-01 CTI report no. 70.407.22.549.01-00 issued by TÜV Rheinland

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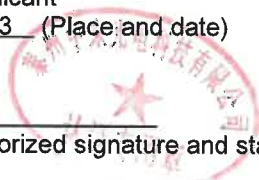

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Object	Manufacturer	Type	Technical Data	Remark
Encapsulation material 6	Zhejiang Tony Electronics CO., Ltd	EPE2100 for both side (combine with cell 1-5, 8, 14, 16-19)	POE Thickness = 0.5 (-0.1 - 0.35)mm CTI = 600 (V)	Tested with PV modules 70402210127-01 CTI report no.: 70.407.21.349.01-00 issued by TÜV SÜD
Frame part 1	Suzhou Lang Cheng metal products Co., Ltd.	6063-T5	Color: silvery or black Thickness : 30 / 35 / 40mm Design load (front/back) = 1600/1600 Pa for 4 clamps with 30 / 35mm Design load (front/back) = 1600/1600 Pa for 4 bolts with 30 / 40mm Design load (front/back) = 3600/1600 Pa for 6 clamps with 30 / 35 / 40mm Design load (front/back) = 1600/1600 Pa for C-shaped steel parallel long side with 30 / 35mm Design load (front/back) = 3600/1600 Pa for C-shaped steel vertical long side with 30 / 35mm	Tested with PV modules TÜV SÜD 704061930402-02 704061930402-03
Frame part 2	Jolywood (Jiangsu)New Material Technology Co., Ltd.	6063-T5	Color: silvery or black Thickness = 30 / 35/ 40mm Connected by : corner brace Design load (front/back) = 3600/1600 Pa for 6 bolts with 3 rails with 30/40mm Design load (front/back) =1600/1600 Pa for 4 clamps with 30 / 35/ 40mm Design load (front/back) = 3600/1600 Pa for bolts mounted in 4 outer holes with 4 supporting rails (only for HD156N/P series modules with 30/40mm) Design load (front/back) = 3600/1600 for 6 clamps with 30 / 35 mm Design load (front/back) = 1600/1600 for C-shaped steel parallel long side with 30 / 35 mm Design load (front/back) = 3600/1600 for C-shaped steel vertical long side with 30 / 35 mm	Tested with PV modules TÜV SÜD 704061930402-02 704061930402-03
Frame part 3	Shanghai Huaneng E-business Co., Ltd.	6063-T5	Color: silvery or black Thickness = 30 / 40mm Connected by: corner brace Design load (front/back)=1600/1600Pa for 4 clamps Design load (front/back)=3600/1600Pa with 6 clamps	Tested with PV modules TÜV SÜD 704061930402-02

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Object	Manufacturer	Type	Technical Data	Remark
Frame part 4	Jolywood (Jiangsu)New Material Technology Co., Ltd.	Aluminium-Magnesium-Zinc (Al-Mg-Zn)	Thickness : 30 mm / 26 mm Color: silvery or black Assembled by corner brace Design load (front/back)=2400/1600Pa & 3600/1600Pa for 6 clamps Design load (front/back)=3600/1600Pa with 4 clamps for 30mm	Tested with PV modules TÜV SÜD 704061930402-07A1&09A1 704061930402-17
Frame parts 5	Jolywood (Jiangsu)New Material Technology Co., Ltd.	6005-T6	Thickness : 35 mm / 30 mm Color: silvery or black Assembled by corner brace Design load (front/back)=3600/2400Pa or 3600/1600Pa with 4 clamps for 35mm, 3600/1600Pa with 6 clamps for 30mm	Tested with PV modules TÜV SÜD 704061930402- 10
Adhesive (frame)	Guangzhou Baiyun Chemical Industry Co., Ltd.	SMG533	Color: white or black	Tested with PV modules
	Suzhou Tonsan Adhesive Ltd. H.B. Fuller (Suzhou) Advanced Material Co.,Ltd	1527	Color: black or white	Tested with PV modules
	Chengdu Guibao Science & technology Co., Ltd.	888A	Color: white	Tested with PV modules 704061930402-04
	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z	Color: white or black	UL (E248611)
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd	1581	Color: white	Tested with appliance UL (E344518)
	Jiangsu Minghao New Material Sci-tech Corporation	MH3668	Color: white	Tested with PV modules 704061930402-17
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	Color: white	Tested with PV modules 70402210127-01
Internal wiring (for interconnection cell-to-cell bus bar) 1	Suzhou YourBest New Materials Co., Ltd.	Copper belt with tin plated	0.25 x 1.0 mm, 0.23 x 1.0 mm Sn60%Pb40% for 5BB	Tested with PV modules
		Copper string with tin plated	Φ=0.35mm Sn60%Pb40% for 12BB & 9BB Φ=0.40mm Sn60%Pb40% for 12BB Φ=0.32mm Sn60%Pb40% for 12BB & 11BB & 9BB	Tested with PV modules
		Copper string with tin plated	Φ=0.30mm Sn60%Pb40% for 12BB & 11BB & 9BB Φ=0.25mm or 0.26mm Sn60%Pb40% for 16BB	Tested with PV modules 704061930402-10 70402210127-01

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Object	Manufacturer	Type	Technical Data	Remark
Internal wiring (for interconnection cell-to-cell bus bar) 2	Wuxi Sveck Technology Co., Ltd.	Copper belt with tin plated	0.23 x 1.0 mm, 0.25 x 1.0 mm Sn60%Pb40% for 5BB	Tested with PV modules
		Copper string with tin plated	Φ=0.35mm Sn60%Pb40% for 12BB & 9BB	Tested with PV modules
		Copper string with tin plated	Φ=0.30mm Sn60%Pb40% for 12BB & 11BB & 9BB Φ=0.32mm Sn60%Pb40% for 12BB & 11BB & 9BB Φ=0.25mm or 0.26mm Sn60%Pb40% for 16BB	Tested with PV modules 704061930402-08 70402210127-01
		Copper string with tin plated	Φ=0.40mm Sn60%Pb40% for 12BB	Tested with PV modules
Internal wiring (for interconnection cell-to-cell bus bar) 3	Xi'an Telison New Materials Co., Ltd.	Copper string with tin plated	Φ=0.40mm Sn60%Pb40% for 12BB	Tested with PV modules
		Copper string with tin plated	Φ=0.35mm Sn60%Pb40% for 12BB & 9BB	Tested with PV modules
		Copper string with tin plated	Φ=0.30mm Sn60%Pb40% for 12BB & 11BB & 9BB Φ=0.32mm Sn60%Pb40% for 12BB & 11BB & 9BB Φ=0.25mm or 0.26mm Sn60%Pb40% for 16BB	Tested with PV modules 704061930402-10 70402210127-01
Internal wiring (for interconnection cell-to-cell bus bar) 4	Jolywood (Jiangsu)New Material Technology Co., Ltd.	Copper string with tin plated	Φ=0.40 mm Sn60%Pb40% for 12BB Φ= 0.35mm Sn60%Pb40% for 12BB & 9BB Φ= 0.30mm Sn60%Pb40% for 12BB & 11BB & 9BB Φ=0.32mm Sn60%Pb40% for 12BB & 11BB & 9BB Φ=0.25mm or 0.26mm Sn60%Pb40% for 16BB	Tested with PV modules 0.3mm was tested in TÜV SÜD 704061930402-04 70402210127-01
Internal wiring (for interconnection cell-to-cell bus bar) 5	Suzhou SanySolar MATERIALS Technology Co., Ltd.	Copper belt with tin plated	Φ= 0.25 / 0.26 mm for 16BB Sn60%Pb40% Φ= 0.30mm Sn60%Pb40% for 12BB & 11BB & 9BB	Tested with PV modules 704061930402-17 70402210127-01

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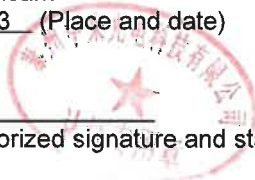

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Object	Manufacturer	Type	Technical Data	Remark
Internal wiring (for inter-string connection)	Suzhou YourBest New Materials Co., Ltd.	Copper belt with tin plated	0.3 x 8.0 mm, 0.3 x 7.0 mm, 0.3 x 6.0 mm, 0.3 x 4.0 mm, 0.35 x 8.0 mm, 0.35 x 7.0 mm, 0.35 x 6.0 mm, 0.35 x 4.0 mm Sn60%Pb40%	Tested with PV modules
	Wuxi Sveck Technology Co., Ltd.	Copper belt with tin plated	0.3 x 8.0 mm, 0.3 x 7.0 mm, 0.3 x 6.0 mm, 0.3 x 4.0 mm, 0.35 x 8.0 mm, 0.35 x 7.0 mm, 0.35 x 6.0 mm, 0.35 x 4.0 mm Sn60%Pb40%	Tested with PV modules
	Xi'an Telison New Materials Co., Ltd.	Copper belt with tin plated	0.3 x 8.0 mm, 0.3 x 4.0 mm, 0.3 x 6.0 mm, 0.3 x 7.0 mm, 0.35 x 8.0 mm, 0.35 x 7.0 mm, 0.35 x 6.0 mm, 0.35 x 4.0 mm Sn60%Pb40%	Tested with PV modules
	Jolywood (Jiangsu) New Material Technology Co., Ltd.	Copper belt with tin plated	0.3 x 8.0 mm, 0.3 x 4.0 mm, 0.3 x 6.0 mm, 0.3 x 7.0 mm, 0.35 x 8.0 mm, 0.35 x 7.0 mm, 0.35 x 6.0 mm, 0.35 x 4.0 mm Sn60%Pb40%	Tested with PV modules
	Suzhou Sansolar MATERIALS Technology Co., Ltd.	Copper belt with tin plated	0.3 x 4.0 mm, 0.3 x 7.0 mm, 0.3 x 8.0 mm, 0.3 x 6.0 mm, 0.35 x 8.0 mm, 0.35 x 7.0 mm, 0.35 x 6.0 mm, 0.35 x 4.0 mm Sn60%Pb40%	Tested with PV modules 704061930402-17
Soldering material	N/A	N/A	N/A	N/A
Fluxing agent	Asahi solder Technology (Wuxi) Co., Ltd.	SF56	-	Tested with PV modules
	Asahi solder Technology (Wuxi) Co., Ltd.	SF105	-	Tested with PV modules
	Costar Electronic Material Co., Ltd.	FD-309	-	Tested with PV modules
	Suzhou Grabble Electronics Technology Co., Ltd.	FM19	-	Tested with PV modules
	SHENZHEN TONGFANG ELECTRONIC NEW MATERIAL CO., LTD	AATF9800-MBB	-	Tested with PV modules
Fixing tape	3M	Tape UV-1	Anti-UV PET	Tested with PV modules
	3M	Tape UV-100	Anti-UV PET	Tested with PV modules
	Suzhou Rongzhi Electronic Technology Co., Ltd.	D60F6-2	-	Tested with PV modules
Insulation tape	N/A	N/A	N/A	-
Light Redirection Film	Suzhou golden electrical technology co., Ltd.	GS-1200-090-01	Material: PET	Tested with PV modules

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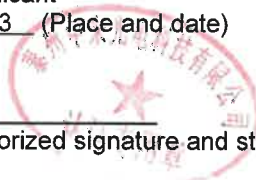
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Object	Manufacturer	Type	Technical Data	Remark
Junction box set 1				
Junction box	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH011B-5	Rated Voltage = 1500VDC Rated Current = 15A Number of diodes: 3	Certificate no.: B 082630
Adhesive (junction box)	Shanghai Huitian New Material Co., Ltd.	HT906Z	Color: white	-
	Suzhou Tonsan Adhesive Ltd.	1527	Color: white	-
Potting material	TONSAN ADHESIVE INC	1521	-	-
	Shanghai Huitian New Chemical Material Co., Ltd.	5299W-S	-	-
Bypass diodes	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	20SQ045	If=20A Tj max = 200°C	-
Cable	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500V	Certificate no.: R 50330654
Connectors	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH202B	Rated Voltage = 1500VDC Rated Current = 30A	Certificate no.: R 50350557
Junction box set 2				
Junction box	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH011C-1	Rated Voltage = 1500VDC Rated Current = 17A Number of diodes: 3	Certificate no.: B 17 02 82630 019
Adhesive (junction box)	Shanghai Huitian New Material Co., Ltd.	HT906Z	Color: white	-
	Suzhou Tonsan Adhesive Ltd.	1527	Color: white	-
Potting material	Shanghai Huitian New Chemical Material Co., Ltd.	5299W / 5299W-S	-	-
	Suzhou Tonsan Adhesive Ltd.	1521	-	-
Bypass diodes	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	20SQ045	If=20A Tj max = 200°C	-
Cable	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500V	Certificate no.: R 50330654
Connectors	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH202B	Rated Voltage = 1500VDC Rated Current = 30A	Certificate no.: R 50350557
Junction box set 3				
Junction box	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH011C-2X	Rated Voltage = 1500VDC Rated Current = 20A Number of diodes:3	Certificate no.: B 082630 0024
Adhesive (junction box)	Suzhou Tonsan Adhesive Ltd.	1527	Color: white	-
	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z	Color: white	-

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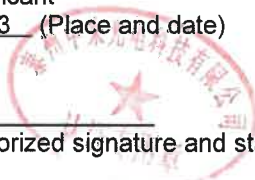
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Object	Manufacturer	Type	Technical Data	Remark
Potting material	Shanghai Huitian New Chemical Material Co., Ltd.	5299W / 5299W-S	-	-
	TONSAN ADHESIVE INC	1521	-	-
Bypass diodes	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	SB3045DY	If=30A Tj max = 200°C	-
Cable	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50330654
Connectors	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH202B	Rated Voltage = 1500VDC Rated Current = 30A	Certificate no.: B 170282630021
Junction box set 4				
Junction box	QC Solar (Suzhou) Corporation	171721-abc	Rated Voltage = 1500VDC Rated Current = 15A/17.5A/20.2A Number of diodes:3	Certificate no.: R 50378787
Adhesive (junction box)	Suzhou Tonsan Adhesive Ltd.	1527	Colour: white or black	-
	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z	Colour: white or black	-
Potting material	Suzhou Tonsan Adhesive Ltd.	1521	-	-
	Suzhou Tonsan Adhesive Ltd.	1533	-	-
	Shanghai Huitian New Chemical Material Co., Ltd.	5299W / 5299W-S	-	-
Bypass diodes	QC Solar (Suzhou) Corporation	SB3050DY	If=30A Tj max = 200°C	-
Cable	QC Solar (Suzhou) Corporation	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50348871
Connectors	QC Solar (Suzhou) Corporation	QC4.10-cd	Rated Voltage = 1500VDC Rated Current = 41A	Certificate no.: R 50353779
	Amphenol Technology (Shenzhen) Co., Ltd	UTXCFabcde; UTXCMabcde (a=A, b=4, c=A, d= A to Z, e=Blank or A or Z)	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	Certificate no.: R 60127169
Junction box set 5				
Junction box	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	FT50xy (x=1, 2, 3 or 4, y= B, D or F)	Rated Voltage = 1500VDC Rated Current = 16A (x=1) Rated Current = 18A (x=2) Rated Current = 20A (x=3) Rated Current = 25A (x=4) Number of diodes:3	Certificate no.: R 50415465

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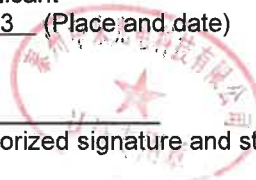
(Signature of authorized TÜV NORD CERT engineer)

Object	Manufacturer	Type	Technical Data	Remark
Adhesive (junction box)	Suzhou Tonsan Adhesive Ltd.	1527	Color: white or black	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SMG533	Color: white or black	-
	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z	Color: white or black	-
	Jiangsu Minghao New Material Sci-tech Corporation	MH3668	Color: white	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	Color: white	-
	Chengdu Guibao Science & technology Co., Ltd.	888A	Color: white	-
Potting material	Suzhou Tonsan Adhesive Ltd.	1521	-	-
	Shanghai Huitian New Chemical Material Co., Ltd.	5299W / 5299W-S	-	-
	Suzhou Tonsan Adhesive Ltd.	1533	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SKF323	-	-
Bypass diodes	Changzhou Starsea electronics Co., LTD	FMK4525A (for x=1)	If=25A Tj max = 200°C	-
	Changzhou Starsea electronics Co., LTD	FMK4530A (for x=2)	If=30A Tj max = 200°C	-
	Changzhou Starsea electronics Co., LTD	FMK4530B / FMK4530T (for x=3)	If=30A Tj max = 200°C	-
	Changzhou Starsea electronics Co., LTD	FMK5040D (for x=4)	If=40A Tj max = 200°C	-
Cable	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	62930 IEC131 1×4mm ² , 1×6mm ²	1×4mm ² , 1×6mm ² Rated Voltage = 1500VDC	Certificate no.: R 50318681
Connectors	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	05-8	Rated Voltage = 1500VDC Rated Current = 30A	Certificate no.: R 50334688
	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
	Amphenol Technology (Shenzhen) Co., Ltd	UTXCFabcde; UTXCMabcde	Rated Voltage = 1500VDC Rated Current = 35A	TÜV Rheinland R50334688
Junction box set 6				

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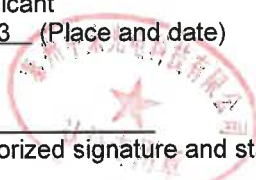
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Object	Manufacturer	Type	Technical Data	Remark
Junction box	QC Solar (Suzhou) Corporation	181821-xyz (x=2, y=1 or 3, z=1 or 2)	Rated Voltage = 1500VDC Rated Current = 20.2A (x=2, y=1, z=1 or 2) Rated Current = 25A (x=2, y=3, z=1 or 2) Number of diodes:3	Certificate no.: R 50431824
Adhesive (junction box)	Suzhou Tonsan Adhesive Ltd.	1527	Colour: white or black	-
	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z	Colour: white or black	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SMG533	Color: white or black	-
	Jiangsu Minghao New Material Sci-tech Corporation	MH3668	Color: white	UL (E335929)
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	Color: white	UL (E335227)
	Chengdu Guibao Science & technology Co., Ltd.	888A	Color: white	Tested with appliance
Potting material	Suzhou Tonsan Adhesive Ltd.	1521	-	-
	Shanghai Huitian New Chemical Material Co., Ltd.	5299W/5299W-S	-	-
	Suzhou Tonsan Adhesive Ltd.	1533	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SKF323	-	-
Bypass diodes	QC Solar (Suzhou) Corporation	30SQ050	If=30A Tj max = 200°C	-
	QC Solar (Suzhou) Corporation	30SQ050A	If=30A Tj max = 200°C	-
Cable	QC Solar (Suzhou) Corporation	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50348871
Connectors	QC Solar (Suzhou) Corporation	QC4.10-cd	Rated Voltage = 1500VDC Rated Current = 41A	Certificate no.: R 50353779
	Amphenol Technology (Shenzhen) Co., Ltd	UTXCFabcde; UTXCMabcde (a=A, b=4, c=A, d=A to Z, e=Blank or A or Z)	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	Certificate no.: R 60127169
Junction box set 7				

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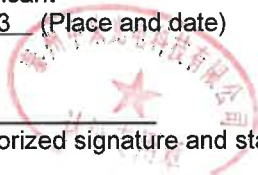
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Object	Manufacturer	Type	Technical Data	Remark
Junction box	Suzhou Xtong Photovoltaic Technologies Co., Ltd.	PV-XT1609Nxyz (x=1 or 2 or 3, y=1 or 2 or 3, z=1 or 2 or 3 or 4 or 5 or 6)	Rated Voltage = 1500VDC Rated Current = 20A (x=1 or 2 or 3, y=2, z=1 or 3 or 4 or 5) Rated current = 17A (x=1, y=1, z=2) Rated current = 25A (x=3, y=3, z=6) Number of diodes:3	Certificate no.: R 50359250
Adhesive (junction box)	Suzhou Tonsan Adhesive Ltd.	1527	Colour: white or black	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SMG533	Color: white or black	-
	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z	Colour: white or black	-
Potting material	Suzhou Tonsan Adhesive Ltd.	1521	-	-
	Suzhou Tonsan Adhesive Ltd.	1533	-	-
	Shanghai Huitian New Chemical Material Co., Ltd.	5299W/5299W-S	-	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SKF323	-	-
Bypass diodes	Panjit Electronics (Wuxi) Co., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd. Suzhou Xtong Photovoltaic Technologies Co., Ltd.	SB3050DC (x=1, y=2, z=1)	If=30A Tj max = 200°C	-
		SB3050S (x=1, y=1, z=2)	If=30A Tj max = 200°C	-
		GFS2545 (x=2, y=2, z=3)	If=25A Tj max = 200°C	-
		XT3050	If=30A Tj max = 200°C	
		TS3045A	If=30A Tj max = 200°C	
		XT3050M	If=30A Tj max = 200°C	
		XT3050A	If=30A Tj max = 200°C	
		XT4050M-A	If=40A Tj max = 200°C	
		XT4550M-A	If=45A Tj max = 200°C	
		XT5050M-A	If=50A Tj max = 200°C	
		XT4050M-B	If=25A Tj max = 200°C	
		XT4550M-B	If=30A Tj max = 200°C	

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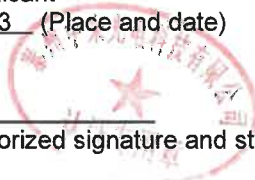
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Object	Manufacturer	Type	Technical Data	Remark
Cable	Suzhou Xtong Photovoltaic Technologies Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50358893
	Wuxi Xinhongye Wire & Cable Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50311889
Connectors	Suzhou Xtong Photovoltaic Technologies Co., Ltd.	PV-XT101.1	Rated Voltage = 1500VDC Rated Current = 35A	Certificate no.: R 50385354
	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
Junction box set 8				
Junction box	QC Solar (Suzhou) Corporation	3Qxy	Rated Voltage = 1500VDC Rated Current = 30A for (x=2, y=1) or 25A for (x=4,y=1) or 20A for (x=6,y=1)	TÜVSÜD B 077362 0009 Rev.02
Adhesive (junction box)	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z	Color: white or black	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1527	Color: white or black	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SMG533	Color: white or black	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd	JS-606	Color: white or black	-
Potting material	H.B. Fuller (Suzhou) Advanced Material Co., Ltd	1521	-	-
	Shanghai Huitian New Chemical Material Co., Ltd.	5299W / 5299W-S	-	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd	1533	-	-
Bypass diodes	QC Solar (Suzhou) Corporation	QCMK3045	If=30A Tj max = 200°C	-
		QCMK4045	If=40A Tj max = 200°C	-
		QCMK5045	If=50A Tj max = 200°C	-
		QCM3045	If=30A Tj max = 200°C	-
		QCM4045	If=40A Tj max = 200°C	-
		QCM5045	If=50A Tj max = 200°C	-
		QCM5045B	If=50A Tj max = 200°C	-

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Object	Manufacturer	Type	Technical Data	Remark
		QCM2545	If=25A Tj max = 200°C	-
Cable	Suzhou Xtong Photovoltaic Technologies Co., Ltd.	H1Z2Z2-K 1x4.0mm ²	Rated Voltage = 1500VDC	Certificate no.: R 50358893
Connectors	QC Solar (Suzhou) Corporation	QC4.10-cd	Rated Voltage = 1500VDC Rated Current = 41A	TÜV Rheinland R50353779
		QC4.10-cds	Rated Voltage = 1500VDC Rated Current = 41A	TÜV SUD 077362 0004 Rev.05
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/xy_UR;PV-KBT4-EVO 2/xy_UR	Rated Voltage = 1500VDC Rated Current = 45A	TÜV Rheinland R60127169
		PV-KST4-EVO 2A/xy_UR;PV-KBT4-EVO 2A/xy_UR	Rated Voltage = 1500VDC Rated Current = 45A	TÜV Rheinland R60127169
Junction box set 9				
Junction box	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	FT60xy	Rated Voltage = 1500VDC Rated Current = 30A / 35A	TÜVSÜD B 073488 0012 Rev.00
Adhesive (junction box)	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z	Color: white or black	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1527	Color: white or black	
	Jiangsu Minghao New Material Sci-tech Corporation	MH3668	Color: white	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	Color: white	
	Chengdu Guibao Science & technology Co., Ltd.	888A	Color: white	
Potting material	H.B. Fuller (Suzhou) Advanced Material Co., Ltd	1521	-	-
	Shanghai Huitian New Chemical Material Co., Ltd.	5299W / 5299W-S	-	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd	1533	-	-
Bypass diodes	Zhejiang Renhe Photovoltaic Technology	RMK4545D	If=45A Tj max = 200°C	-

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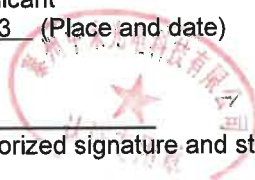

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Object	Manufacturer	Type	Technical Data	Remark
	Co., Ltd.	RMK4560D	If=60A Tj max = 200°C	-
Cable	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	H1Z2Z2-K 1×4mm ² , 62930 IEC131 1×4mm ² , 1×6mm ²	Rated Voltage = 1500VDC	TÜV Rheinland R50318681 B 073844 009 Rev.00
Connectors	Zhejiang Renhe Photovoltaic Technology Co., Ltd.	05-8,	Rated Voltage = 1500VDC Rated Current = 30A	TÜV Rheinland R50334688
		RHC2xyzu	Rated Voltage = 1500VDC Rated Current = 35A	TÜV Rheinland R50473621
	Amphenol Technology (Shenzhen) Co., Ltd	UTXCFabcde; UTXCMabcde	Rated Voltage = 1500VDC Rated Current = 35A	TÜV Rheinland R50340393
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/XY_UR, PV- KBT4-EVO 2/XY_UR	Rated Voltage = 1500VDC Rated Current = 45A	TÜV Rheinland R60127169
Junction box set 10				
Junction box	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH011C-5	Rated Voltage = 1500VDC Rated Current = 25A / 30A	TÜVSÜD B 082630 0028 Rev.00
Adhesive (junction box)	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z	Color: white or black	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1527	Color: white or black	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	Color: white	-
	Guangzhou Baiyun Chemical Industry Co., Ltd.	SMG533	Color: white or black	-
	Chengdu Guibao Science & technology Co., Ltd.	888A	Color: white	-
Potting material	BEIJING TONSAN New Material Technology Co.LTD.	1521	-	-
		1533	-	-
	Shanghai Huitian New Chemical Material Co., Ltd.	5299W / 5299W-S	-	-
	CHENGDU GUIBAO SCIENCE&TECHNOLOGY CO., LTD	4808	-	-
Bypass diodes	Zhejiang Zhonghuan Sunter PV Technology	30SQ045	If=30A Tj max = 200°C	-

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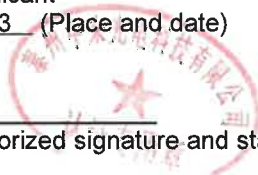
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Object	Manufacturer	Type	Technical Data	Remark
	Co., Ltd. Panjit Electronics (Wuxi) Co., Ltd.	35SQ045	If=35A Tj max = 200°C	
		40SQ045	If=40A Tj max = 200°C	-
Cable	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	H1Z2Z2-K 1×4mm ² , 62930 IEC131 1×4mm ² , 1×6mm ²	Rated Voltage = 1500VDC	TÜV Rheinland R50330645, R50436635
Connectors	Zhejiang Zhonghuan Sunter PV Technology Co., Ltd.	PV-ZH202B	Rated Voltage = 1500VDC Rated Current = 40A	TÜVSUD B170282630021 Rev.01
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/XY_UR, PV- KBT4-EVO 2/XY_UR	Rated Voltage = 1500VDC Rated Current = 45A	TÜV Rheinland R60127169
Junction box set 11				
Junction box	Jiangsu Tonglin Electric Co., Ltd.	TL-BOX022.3-A- 2-1xyzF; TL-BOX022.3-A- 2-2xF; TL-BOX022.3-A- 2-3xyzF	Rated Voltage = 1500VDC Rated Current = 25A / 30A	TÜV SÜD (B 079881 0008 Rev. 01)
Adhesive (junction box)	H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1527	Color: white or black	-
Potting material	BEIJING TONSAN New Material Technology Co.LTD.	1521	-	-
Bypass diodes	Jiangsu Tonglin Electric Co., Ltd.	PT001B-HS	If=30A Tj max = 200°C	-
		PT001B-HS-25	If=30A Tj max = 200°C	-
		PT001B-HS-30	If=40A Tj max = 200°C	-
Cable	Jiangsu Tonglin Electric Co., Ltd.	62930 IEC131 1×4mm ² ,1×6mm ²	Rated Voltage = 1500VDC	TÜV Rheinland R 50462100
Connectors	Jiangsu Tonglin Electric Co., Ltd.	TL-Cable01S	Rated Voltage = 1500VDC Rated Current = 30A	TÜV Rheinland R 50332964
	Stäubli Electrical Connectors AG	TL-Cable01S-F	Rated Voltage = 1500VDC Rated Current = 30A	TÜV Rheinland R 60127169
	Stäubli Electrical Connectors AG	PV-KST4-EVO 2/XY_UR, PV-KBT4-EVO 2/XY_UR	Rated Voltage = 1500VDC Rated Current = 45A	TÜV Rheinland R 60127169

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Object	Manufacturer	Type	Technical Data	Remark
Junction box set 12				
Junction box	Jolywood (Suzhou) Sunwatt Co.,Ltd.	JWPV-01a	Rated Voltage = 1500VDC Rated Current = 25A or 30A Reverse current = 35A	Certificate no.: B 096222
Adhesive (junction box)	Shanghai Huitian New Chemical Material Co., Ltd.	HT906Z	Color: white or black	-
	H.B. Fuller (Suzhou) Advanced Material Co., Ltd.	1527	Color: white or black	-
	Hangzhou Zhijiang Silicone Chemicals Co., Ltd.	JS-606	Color: white	-
	Chengdu Guibao Science & technology Co., Ltd.	888A	Color: white	-
Potting material	Beijing Tonsan New Material Technology Co.,Ltd.	1521	-	-
	Beijing Tonsan New Material Technology Co.,Ltd.	1533	-	-
	Hangzhou Zhijiang Silicone Chemicals Co.,Ltd.	JS-1184	-	-
	Shanghai Huitian New Chemical Material Co., Ltd.	5299W-S	-	-
Bypass diodes	Jolywood (Suzhou) Sunwatt Co.,Ltd.	MK4045	If=40A Tj max = 200°C	-
	Jolywood (Suzhou) Sunwatt Co.,Ltd.	MK5045	If=50A Tj max = 200°C	-
Cable	Jolywood (Suzhou) Sunwatt Co.,Ltd.	62930 IEC131 1×4mm², 1×6mm²	Rated Voltage = 1500VDC	Certificate no.: B 096222
Connectors	Jolywood (Suzhou) Sunwatt Co.,Ltd.	JWC2xyzu	Rated Voltage = 1500VDC Rated Current = 35A	Certificate no.: B 096222
	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

Remark:

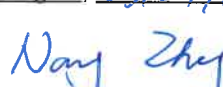
- (1) Fire test class C (MST 23 of IEC 61730-2: 2016) has been evaluated on all the raw materials listed above.
- (2) Pollution degree I (Sequence B1 of IEC 61730-2:2016) has been evaluated on all the raw materials listed above.
- (3) Fire test Class C (MST 23 of IEC 61730-2: 2016) has been evaluated on all the raw materials listed above. Besides, Fire test Class A according to ANSI/UL 1703-2018 (MST 23 of IEC / EN 61730-2) has been evaluated on the following materials

Raw material	Type	Manufacturer
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File No.: PVP11099/22P-02

Attached to Test Report No.: 492011210.010

Front cover	Heat strengthened glass with external AR coating Thickness = 2.5mm / 2.0mm	Xinyi PV Products (Anhui) Holdings Ltd.
Encapsulation system	TF4(P)	Hangzhou First PV Material Co., Ltd.
Back cover	Heat strengthened glass with inside white ceramic glaze / Heat strengthened glass Thickness = 2.5mm / 2.0mm	Xinyi PV Products (Anhui) Holdings Ltd.

(4) The raw materials marked in blue are added in the most recent project.

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

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