

# Specification of THxxxPM5-78SA Monocrystalline PERC solar module

## KEY features

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**Technology**  
Innovative structure; Low temperature adhesive; High density setting
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**Beautiful appearance**  
Module's layout is homogeneous and consistent; With more aesthetic feeling of science and technology
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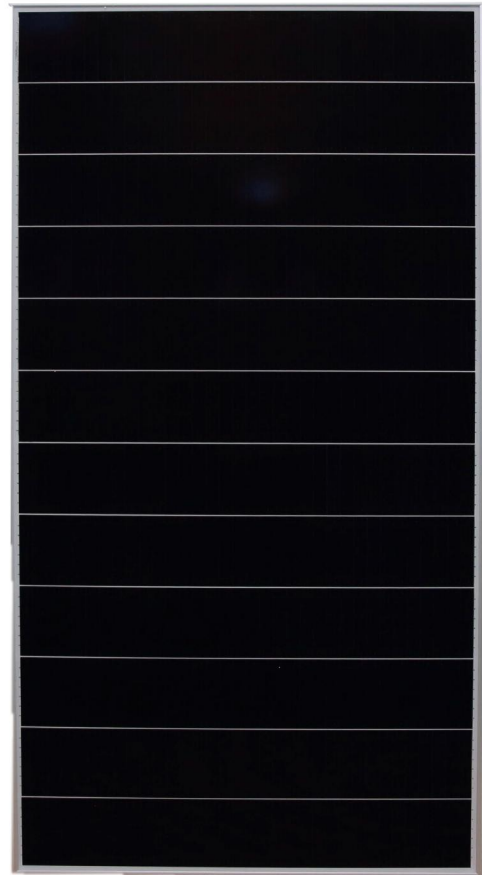
**Safety and reliability**  
No micro-crack caused by welding; Lower operating temperature; High pressure resistance
- 

**Lower system cost**  
High screen-to-body ratio which reduce system cost
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**Low hot spot effect**  
Prolong module lifetime; Reduce electricity loss during generating
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**Lower occlusion loss**  
Parallel layout brings high effective generation hours
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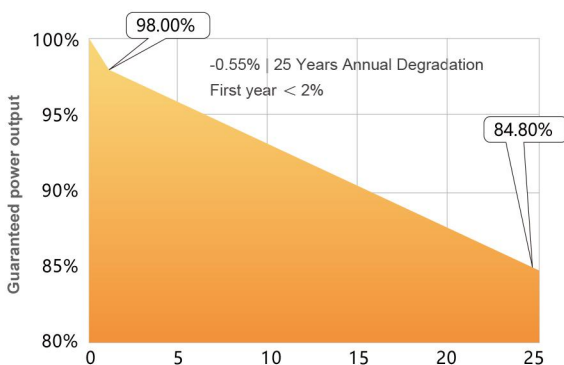
**Green and environmental friendly**  
Insist environmental friendly faith; Fluorine-free and low Pb in module



15 year material process warranty

25 year linear power output warranty

## Warranty



## Complete system and product certifications

- IEC 61215/61730, IEC62804(PID), IEC61701(Salt), IEC62716(Ammonia)
- ISO 9001:2015 / Quality management System
- ISO 14001:2015 / Environmental management System
- ISO 45001:2018 / Occupational health and safety Management System
- ISO 50001:2011 / Energy management Systems
- IEC TS 62941-2016 / Photovoltaic industry Quality management System



### Electrical Characteristics at Standard Test Conditions(STC)

Module Type:TH *** PM5-78SA	480	475	470	465	460	455	450
Maximum Power-Pm [W]	480	475	470	465	460	455	450
Open Circuit Voltage-Voc [V]	49.6	49.5	49.4	49.4	49.2	49.0	48.8
Short Circuit Current-Isc [A]	12.17	12.12	12.07	12.03	11.99	11.95	11.90
Maximum Power Voltage-Vm [V]	41.1	41	40.9	40.9	40.7	40.5	40.3
Maximum Power Current-Im [A]	11.68	11.59	11.49	11.37	11.30	11.23	11.17
Module Efficiency-η [%]	21.38	21.16	20.94	20.72	20.49	20.27	20.05

### Electrical Characteristics at NMOT

Maximum Power-Pm [W]	361	358	354	350	346	343	339
Open Circuit Voltage-Voc [V]	47.3	47.2	47.1	47.1	46.9	46.7	46.5
Short Circuit Current-Isc [A]	9.80	9.76	9.72	9.69	9.66	9.63	9.59
Maximum Power Voltage-Vm [V]	39.2	39.1	39.0	39.0	38.8	38.6	38.4
Maximum Power Current-Im [A]	9.22	9.15	9.08	8.98	8.93	8.87	8.82

Note: 1. Standard Test Conditions [STC]: Irradiance 1000 W/m<sup>2</sup>; AM 1.5; ambient temperature 25 °C according to EN 60904-3;  
 2. Nominal Module Operating Temperature (NMOT): Irradiance 800W/m<sup>2</sup>; wind speed 1m/s; ambient temperature 20 °C.  
 3. Tolerance of Pm: 0~+5W, Measuring uncertainty of power: ±3%. Performance deviation of Voc [V], Isc [A], Vm [V] and Im [A]: ±3%.

### Temperature Characteristics

NMOT	42.3°C (±2°C)
Temperature Coefficient of Voc	-0.27%/°C
Temperature Coefficient of Isc	0.04%/°C
Temperature Coefficient of Pm	-0.34%/°C

### Maximum Ratings

Maximum System Voltage [V]	DC 1500/1000(IEC)
Series Fuse Rating [A]	20
Maximum Surface Load Capacity [Pa]	5,400
Temperature Range [°C]	-40~+85

Withstanding Hail Maximum diameter of 25 mm with impact speed of 23 m • s<sup>-1</sup>

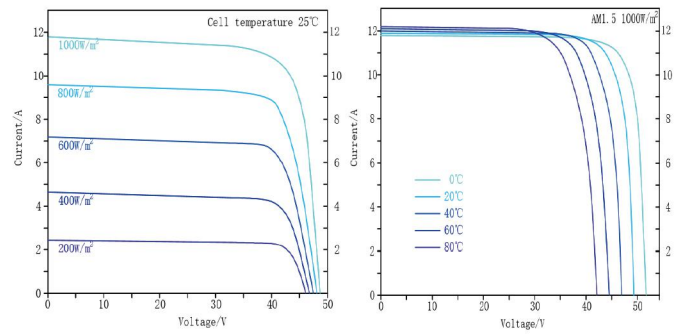
### Package

container	40' GP
Number of pallets per container	31
Number of modules per container	682

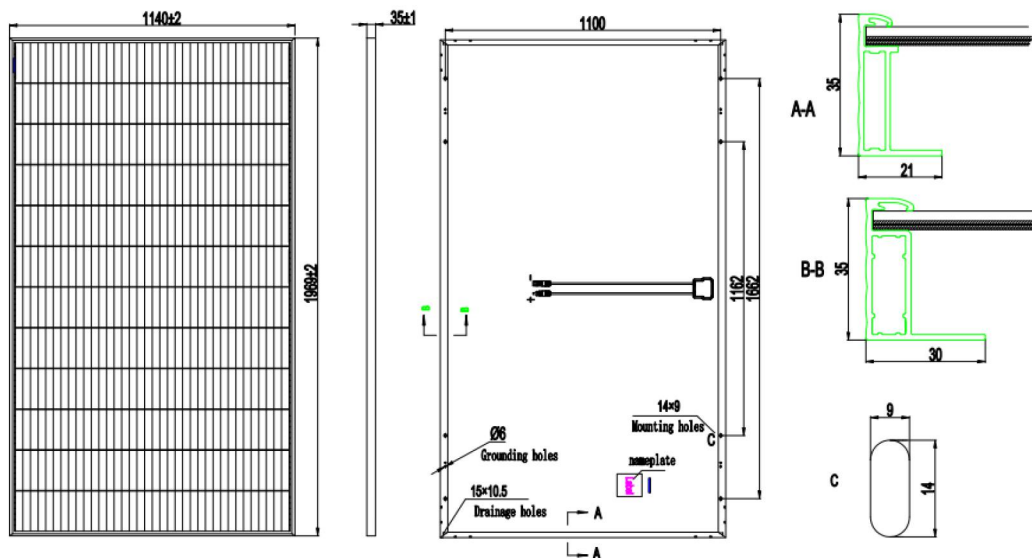
### Mechanical Characteristics

Dimensions	1969×1140×35mm
Weight	24kg
Front Glass	AR coating tempered glass, 3.2mm
Frame	Anodized aluminum profile
Cells	Mono-crystalline solar cell
Cell Orientation	432 (36*12)
Junction Box	IP68, two diodes
Cable	4mm <sup>2</sup> , 800mm (Be customized by customers)

### I-V curve



### Drawing



### Declaration:

With the technical progress and product updates, there exists a deviation between the technical parameter of the TW Solar's future products and the technical parameter in this specification. The TW Solar reserves the right to adjust the technical parameter at any time without notifying the customers. TW Solar reserves the final right of interpretation.

# Specification of THxxxPM5-66SA Monocrystalline PERC solar module

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### Lower occlusion loss

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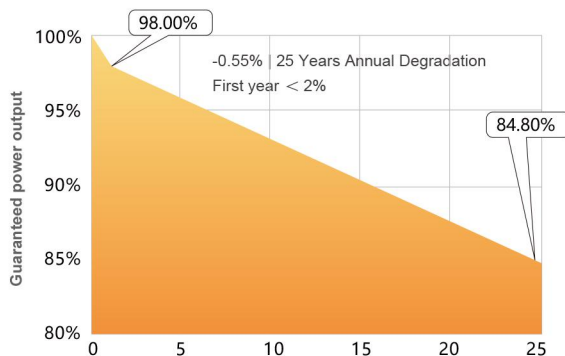


**material process warranty**



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### Electrical Characteristics at Standard Test Conditions(STC)

Module Type:TH *** PM5-66SA	400	395	390	385	380	375
Maximum Power-Pm [W]	400	395	390	385	380	375
Open Circuit Voltage-Voc [V]	49.5	49.4	49.3	49.3	49.1	48.9
Short Circuit Current-Isc [A]	10.12	10.07	10.03	9.98	9.93	9.89
Maximum Power Voltage-Vm [V]	41	40.9	40.8	40.8	40.6	40.4
Maximum Power Current-Im [A]	9.76	9.66	9.56	9.44	9.36	9.28
Module Efficiency-η [%]	21.3	21.1	20.8	20.5	20.3	20.0

### Electrical Characteristics at NMOT

Maximum Power-Pm [W]	301	297	294	290	286	282
Open Circuit Voltage-Voc [V]	47.2	47.1	47.0	47.0	46.8	46.6
Short Circuit Current-Isc [A]	8.15	8.11	8.08	8.04	8.00	7.97
Maximum Power Voltage-Vm [V]	39.1	39.0	38.9	38.9	38.7	38.5
Maximum Power Current-Im [A]	7.71	7.63	7.55	7.45	7.39	7.33

Note: 1. Standard Test Conditions [STC]: Irradiance 1000 W/m<sup>2</sup>; AM 1.5; ambient temperature 25 °C according to EN 60904-3;  
 2. Nominal Module Operating Temperature (NMOT): Irradiance 800W/ m<sup>2</sup>; wind speed 1m/s ; ambient temperature 20 °C .  
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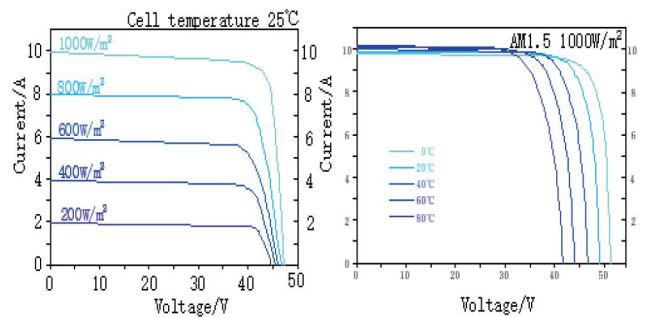
### Package

container	40' GP
Number of pallets per container	31
Number of modules per container	868

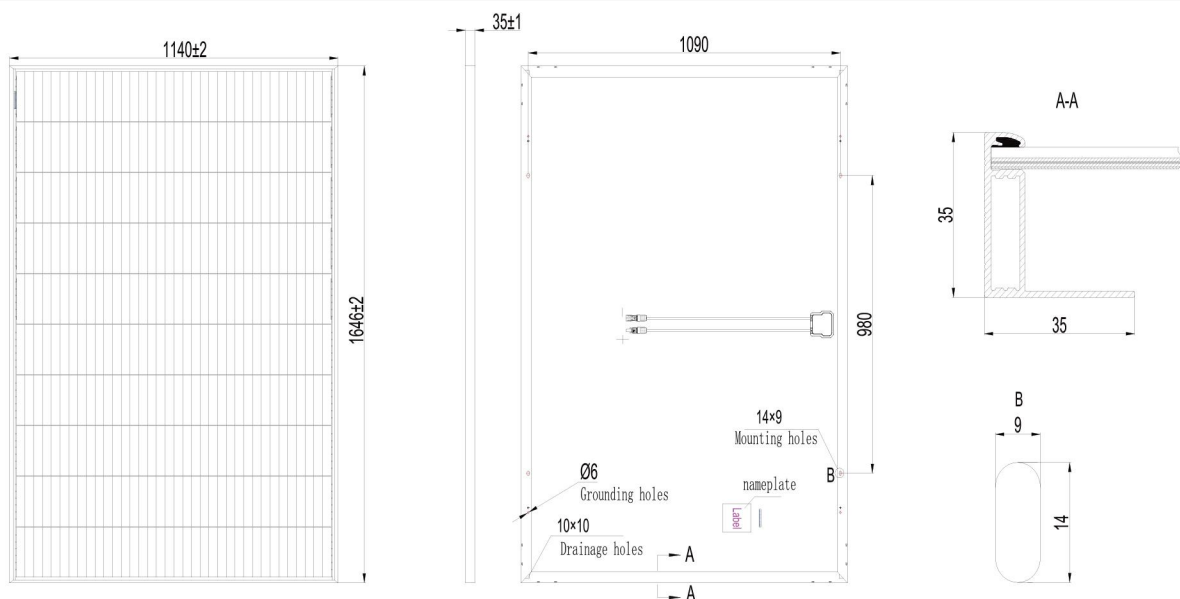
### Mechanical Characteristics

Dimensions	1646×1140×35 mm
Weight	20.5kg
Front Glass	AR coating tempered glass, 3.2mm
Frame	Anodized aluminum profile
Cells	Mono-crystalline solar cell
Cell Orientation	360 (36*10)
Junction Box	IP68, two diodes
Cable	4mm <sup>2</sup> , 800mm (Be customized by customers)

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