Vertex

P-type PERC

BACKSHEET MONOCRYSTALLINE MODULE

TSM-DE20 **590-610W**

610W / MAXIMUM POWER OUTPUT

21.6% / MAXIMUM EFFICIENCY

High customer value

- Lower LCOE (Levelized Cost Of Energy), reduced BOS (Balance Of System) cost, shorter payback time
- Lower guaranteed first year and annual degradation
- Designed for compatibility with existing mainstream system components

High power up to 610W

- Up to 21.6% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection

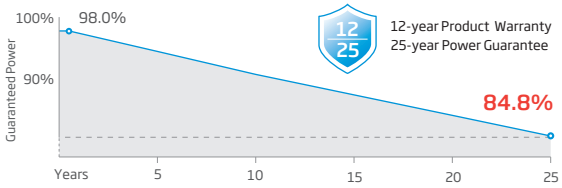
High reliability

- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load

High energy yield

- Excellent IAM (Incident Angle Modifier) and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions
- Lower temperature coefficient (-0.34%) and operating temperature

Performance Warranty



* Please refer to product warranty for details

Comprehensive Products and System Certificates

IEC61215/IEC61730/IEC61701/IEC62716/UL61730
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
ISO45001: Occupational Health and Safety Management System

Version number: TSM_EN_2024_A

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P-type PERC Backsheet Monocrystalline Module

ELECTRICAL DATA (STC)

Peak Power Watts-PMAX(Wp)*	590	595	600	605	610
Power Selection (W)**			0 ~ +5		
Maximum Power Voltage-VMPP (V)	34.0	34.2	34.4	34.6	34.8
Maximum Power Current-IMPP (A)	17.35	17.40	17.44	17.49	17.53
Open Circuit Voltage-VOC (V)	41.1	41.3	41.5	41.7	41.9
Short Circuit Current-ISC (A)	18.42	18.47	18.52	18.57	18.62
Module Efficiency η m (%)	20.8	21.0	21.2	21.4	21.6

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5. *Measuring tolerance: ±3%. **Power selection up to: +3%.

ELECTRICAL DATA (NOCT)

Peak Power Watts-PMAX(Wp)	447	451	454	458	461
Maximum Power Voltage-VMPP (V)	31.7	31.9	32.0	32.2	32.4
Maximum Power Current-IMPP (A)	14.09	14.13	14.18	14.22	14.25
Open Circuit Voltage-VOC (V)	38.7	38.9	39.1	39.3	39.5
Short Circuit Current-ISC (A)	14.85	14.88	14.92	14.96	15.00

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

TEMPERATURE RATINGS

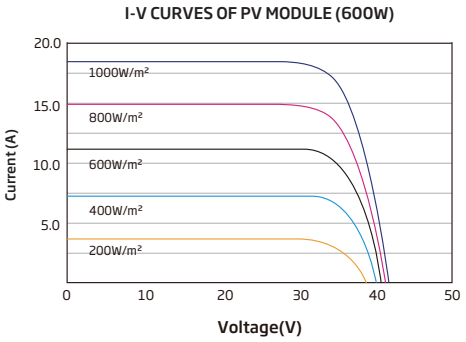
NOCT (Nominal Operating Cell Temperature)	43℃ (±2℃)
Temperature Coefficient of PMAX	- 0.34% /℃
Temperature Coefficient of VOC	- 0.25% /℃
Temperature Coefficient of ISC	0.04% /℃

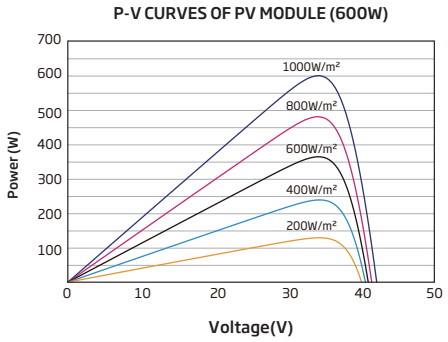
Due to different testing methods, the actual performances might differ from the declared specifications.

MAXIMUM RATINGS

Operational Temperature	-40~+85℃
Maximum System Voltage	1500V DC (IEC) 1500V DC (UL)
Max Series Fuse Rating	30A

CURVES OF PV MODULE

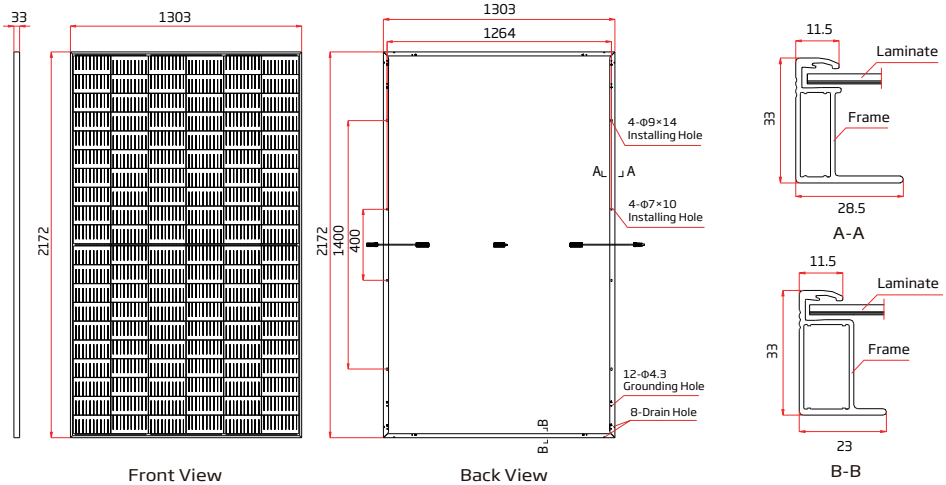




MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	120 cells
Module Dimensions	2172×1303×33 mm (85.51×51.30×1.30 inches)
Weight	29.3 kg (64.6 lb)
Front Glass	3.2mm (0.13inches), AR Coating Tempered Glass
Backsheet	White
Frame	33mm(1.30 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²) Portrait: 350/280 mm(13.78/11.02 inches) Length can be customized
Connector	MC4 EVO2 / TS4*
Packaging	Modules per box: 33 pieces Modules per 40' container: 594pieces

*Please refer to regional datasheet for specified connector.



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CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.

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