

P-type PERC

FRAME 252 LAYOUT MONOCRYSTALLINE MODULE

TSM-DE15V(II) 470-490W

490_W / MAXIMUM
POWER OUTPUT

20.8% / MAXIMUM
EFFICIENCY



High power

- Up to 490W front power and 20.8% module efficiency with half-cut and MBB (Multi Busbar) technology bringing more BOS savings.



High reliability

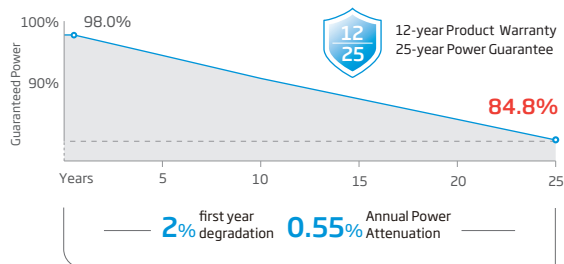
- Ensured PID resistance through cell process and module material control
- Resistant to salt, acid and ammonia
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load



High energy yield

- Excellent IAM by 3rd party with cell process and module material optimization
- Better anti-shading performance and lower 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



ELECTRICAL DATA (STC)

Peak Power Watts- $P_{MAX}(W_p)^*$	470	475	480	485	490
Power Selection (W)**	0 ~ +5				
Maximum Power Voltage- V_{MPP} (V)	36.1	36.2	36.3	36.4	36.5
Maximum Power Current- I_{MPP} (A)	13.02	13.12	13.23	13.33	13.43
Open Circuit Voltage- V_{oc} (V)	43.0	43.1	43.2	43.3	43.4
Short Circuit Current- I_{sc} (A)	13.73	13.80	13.92	13.97	14.07
Module Efficiency η_m (%)	20.0	20.2	20.4	20.6	20.8

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

ELECTRICAL DATA (NOCT)

Peak Power Watts- $P_{MAX}(W_p)$	354	358	362	365	369
Maximum Power Voltage- V_{MPP} (V)	33.6	33.8	33.9	34.0	34.1
Maximum Power Current- I_{MPP} (A)	10.53	10.59	10.68	10.72	10.80
Open Circuit Voltage- V_{oc} (V)	40.5	40.6	40.7	40.7	40.8
Short Circuit Current- I_{sc} (A)	11.06	11.12	11.22	11.26	11.34

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

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature) 43°C ($\pm 2^\circ\text{C}$)

Temperature Coefficient of P_{MAX} -0.34% /°C

Temperature Coefficient of V_{oc} -0.25% /°C

Temperature Coefficient of I_{sc} 0.04% /°C

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

MAXIMUM RATINGS

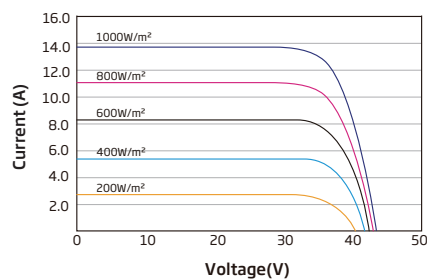
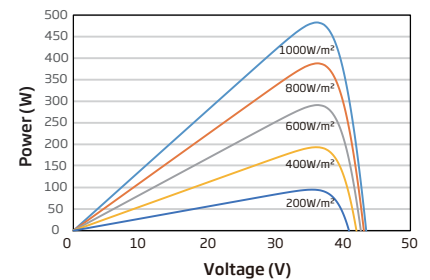
Operational Temperature -40~+85°C

Maximum System Voltage 1500V DC (IEC)

1500V DC (UL)

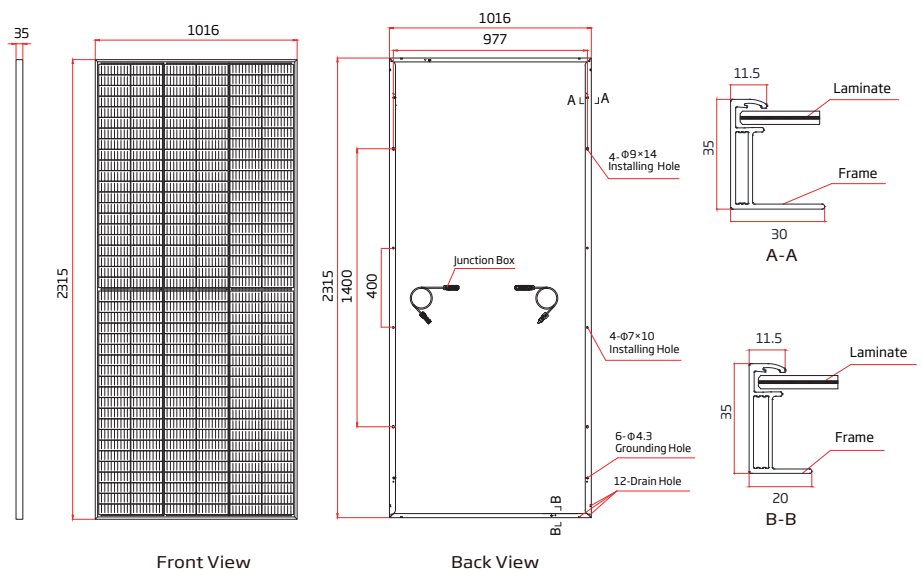
Max Series Fuse Rating 25A

(Do not connect Fuse in Combiner Box with two or more strings in parallel connection)

CURVES OF PV MODULE**I-V CURVES OF PV MODULE(480 W)****P-V CURVES OF PV MODULE(480W)****MECHANICAL DATA**

Solar Cells	Monocrystalline
No. of cells	252 cells (12 x 21)
Module Dimensions	2315×1016×35 mm (91.14×40×1.38 inches)
Weight	26.0 kg (57.3 lb)
Front Glass	3.2mm (0.13 inches), AR Coating Heat Strengthened Glass
Backsheet	White
Frame	35mm (1.38 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² (0.006 inches ²) Portrait: 450/450 mm (17.72/17.72 inches) Landscape: 1400 mm/1400 mm (43.31/43.31 inches)
Connector	MC4 EV02 / TS4*
Packaging	Modules per box: 31 pieces Modules per 40' container: 620 pieces

*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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Version number: TSM_NA_EN_2024_A