

Preliminary

Vertex N

MONOFACIAL DUAL GLASS MODULE

PRODUCT: TSM-NEG18R.28

PRODUCT RANGE: 475-505W

505W

MAXIMUM POWER OUTPUT

0~+5W

POSITIVE POWER TOLERANCE

22.7%

MAXIMUM EFFICIENCY



High customer value

- Lower LCOE (levelized cost of energy), reduced BOS (balance of system) cost, shorter payback time
- Guaranteed first year and annual degradation
- High module power, high string power and low voltage design



High power up to 505W

- Up to 22.7% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection



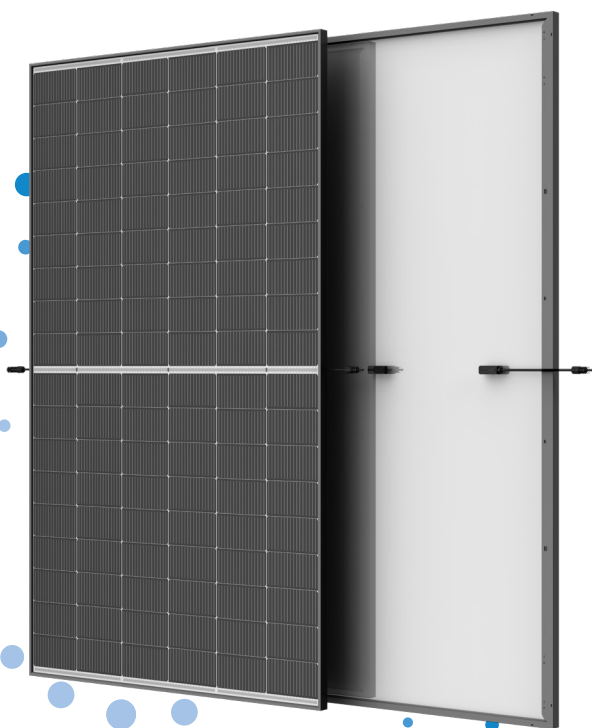
Dual-glass design, high reliability

- Less prone to micro-cracks and scratches on the back during installation
- Applicable in harsh environments such as salt, ammonia, sand, high temperature and high humidity areas with excellent fire rating, weather resistance, salt spray, sand dust, ammonia performance
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load
- Easy to handle and install on roofs with excellent size and light weight

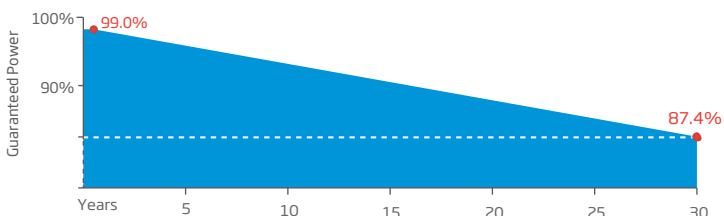


Ultra-low degradation, longer warranty, higher output

- Extremely low 1% first year degradation and 0.4% annual power attenuation
- Up to 15 years product warranty and 30 years power warranty
- Lower temperature coefficient (-0.30%) and operating temperature



Trina Solar's Vertex Monofacial Dual Glass Performance Warranty



Comprehensive Products and System Certificates



IEC61215/IEC61730/IEC61701/IEC62716

ISO 9001: Quality Management System

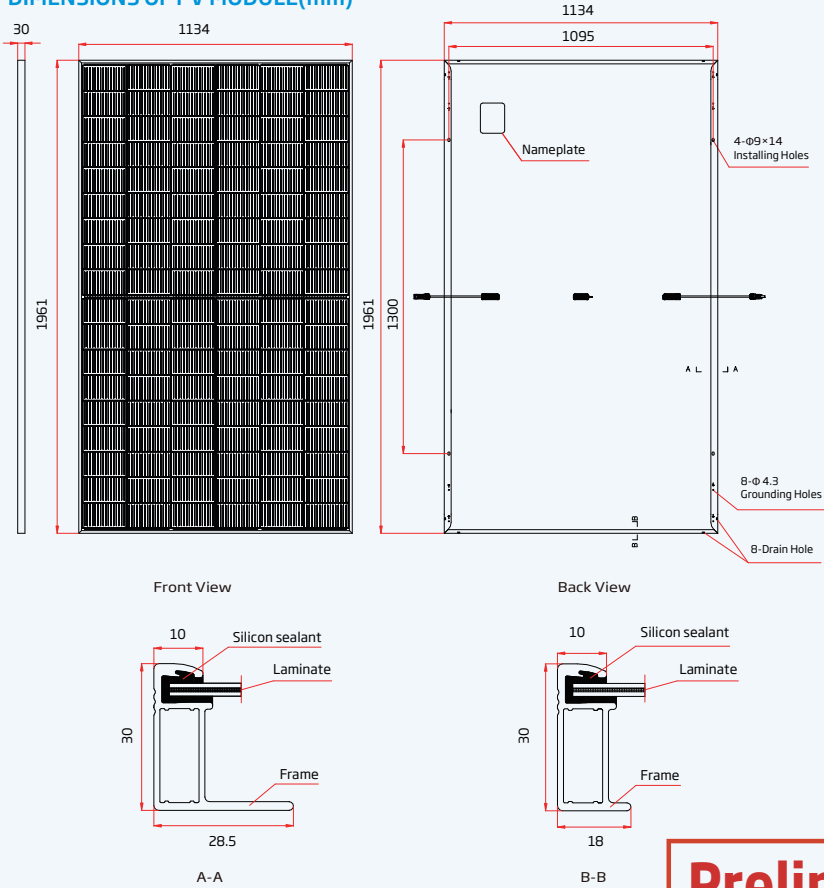
ISO 14001: Environmental Management System

ISO14064: Greenhouse Gases Emissions Verification

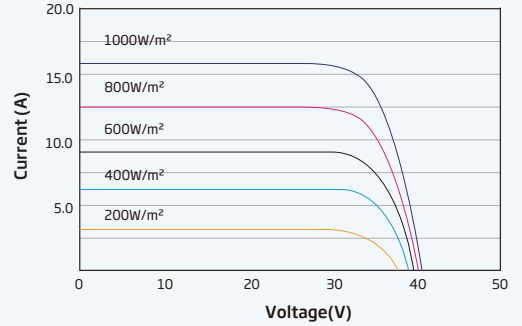
ISO45001: Occupational Health and Safety Management System



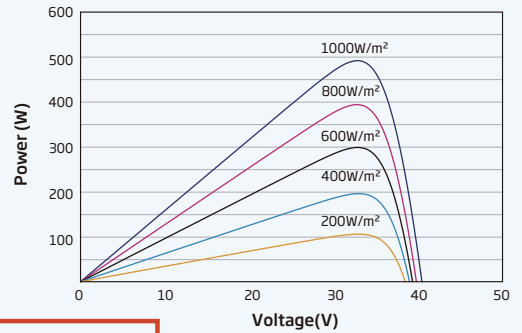
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE (490W)



P-V CURVES OF PV MODULE (490W)



Preliminary

ELECTRICAL DATA (STC)

| | | | | | | | |
|--|--------|-------|-------|-------|-------|-------|-------|
| Peak Power Watts-P _{MAX} (Wp)* | 475 | 480 | 485 | 490 | 495 | 500 | 505 |
| Power Tolerance-P _{MAX} (W) | 0 ~ +5 | | | | | | |
| Maximum Power Voltage-V _{MPP} (V) | 32.3 | 32.5 | 32.7 | 32.9 | 33.1 | 33.3 | 33.5 |
| Maximum Power Current-I _{MPP} (A) | 14.72 | 14.77 | 14.84 | 14.91 | 14.97 | 15.03 | 15.09 |
| Open Circuit Voltage-V _{OC} (V) | 39.0 | 39.2 | 39.4 | 39.6 | 39.8 | 40.0 | 40.3 |
| Short Circuit Current-I _{SC} (A) | 15.68 | 15.72 | 15.76 | 15.80 | 15.83 | 15.86 | 15.90 |
| Module Efficiency η _m (%) | 21.4 | 21.6 | 21.8 | 22.0 | 22.3 | 22.5 | 22.7 |

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

ELECTRICAL DATA (NOCT)

| | | | | | | | |
|--|-------|-------|-------|-------|-------|-------|-------|
| Maximum Power-P _{MAX} (Wp) | 363 | 367 | 370 | 374 | 378 | 381 | 385 |
| Maximum Power Voltage-V _{MPP} (V) | 30.4 | 30.6 | 30.8 | 31.0 | 31.3 | 31.5 | 31.7 |
| Maximum Power Current-I _{MPP} (A) | 11.94 | 11.98 | 12.02 | 12.06 | 12.08 | 12.11 | 12.15 |
| Open Circuit Voltage-V _{OC} (V) | 36.9 | 37.1 | 37.3 | 37.5 | 37.7 | 38.0 | 38.2 |
| Short Circuit Current-I _{SC} (A) | 12.64 | 12.67 | 12.70 | 12.74 | 12.76 | 12.78 | 12.82 |

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

MECHANICAL DATA

| | |
|----------------------|---|
| Solar Cells | Monocrystalline |
| No. of cells | 108 cells |
| Module Dimensions | 1961×1134×30mm (77.20×44.65×1.18 inches) |
| Weight | 23.5kg (51.8 lb) |
| Front Glass | 1.6mm High Transmission, AR Coated Heat Strengthened Glass |
| Encapsulant material | POE/EVA |
| Back Glass | 1.6mm (0.06 inches), Heat Strengthened Glass |
| Frame | 30mm(0.06 inches) Anodized Aluminium Alloy |
| J-Box | IP 68 rated |
| Cables | Photovoltaic Technology Cable 4.0mm ² (0.006 inches ²) Portrait: 280/350 mm(11.02/13.78 inches) Length can be customized |
| Connector | MC4 EVO2 / TS4 Plus / TS4* |

*Please refer to regional datasheet for specified connector.

TEMPERATURE RATINGS

| | |
|---|-------------|
| NOCT (Nominal Operating Cell Temperature) | 43°C (±2°C) |
| Temperature Coefficient of P _{MAX} | -0.30%/°C |
| Temperature Coefficient of V _{OC} | -0.24%/°C |
| Temperature Coefficient of I _{SC} | 0.04%/°C |

MAXIMUM RATINGS

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

WARRANTY

- 15 year Product Workmanship Warranty
- 30 year Power Warranty
- 1% first year degradation
- 0.4% Annual Power Attenuation

(Please refer to product warranty for details)

PACKAGING CONFIGURATION

- Modules per box: 36 pieces
- Modules per 40' container: 864 pieces