

**Preliminary**

# Vertex N

MONOFACIAL DUAL GLASS MODULE

PRODUCT: TSM-NEG18R.20

PRODUCT RANGE: 475-500W

**500W**

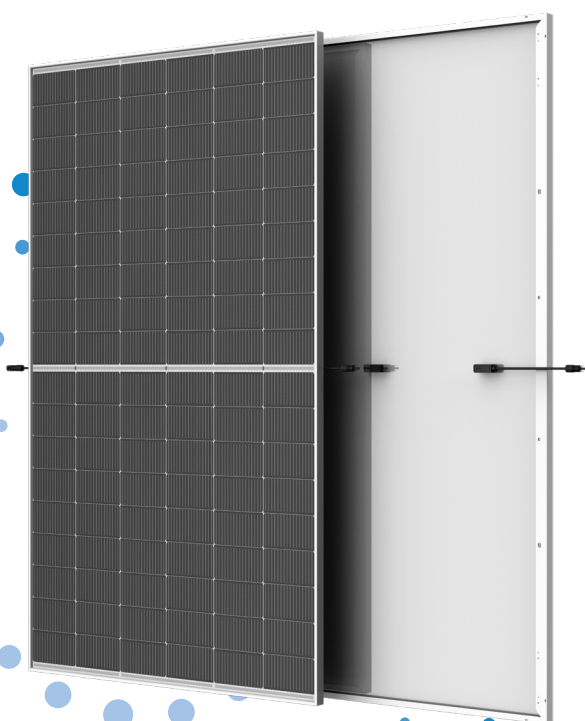
MAXIMUM POWER OUTPUT

**0~+5W**

POSITIVE POWER TOLERANCE

**22.5%**

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 500W

- Up to 22.5% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection



### High reliability

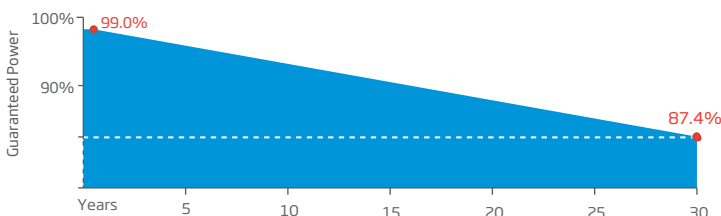
- Minimized micro-cracks with innovative non-destructive cutting technology
- Ensured PID resistance through cell process and module material control
- Resistant to harsh environments such as salt, ammonia, sand, high temperature and high humidity areas
- Mechanical performance up to 5400 Pa positive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



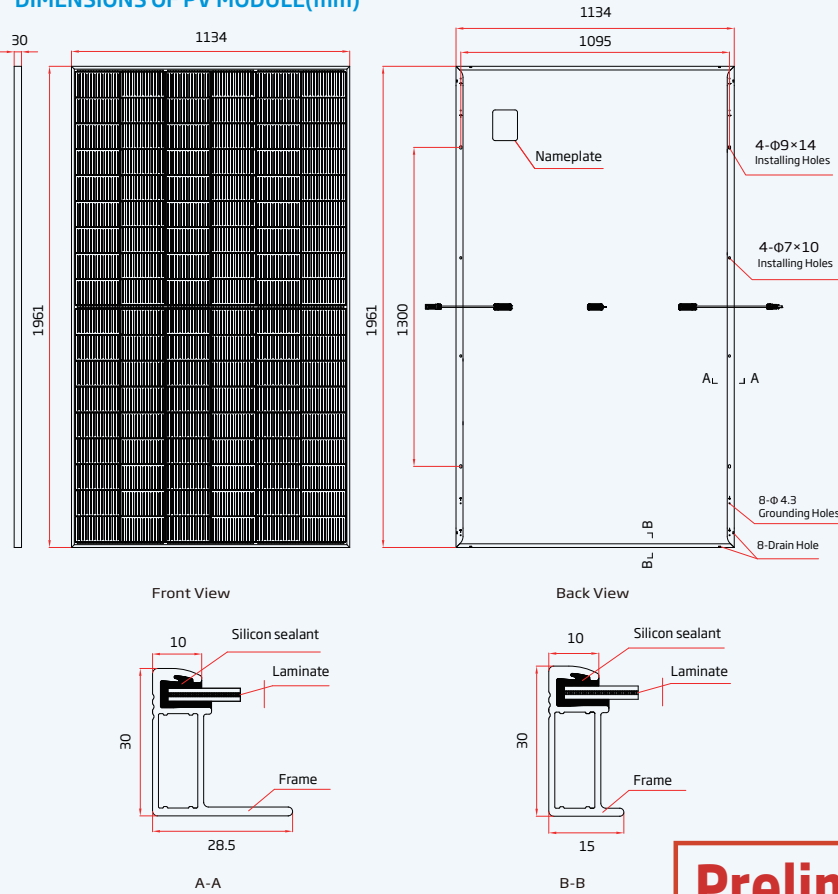
### High energy yield

- Extremely low 1% first year degradation and 0.4% annual power attenuation
- The unique design provides optimized energy production under inter-row shading conditions
- Lower temperature coefficient (-0.30%) and operating temperature

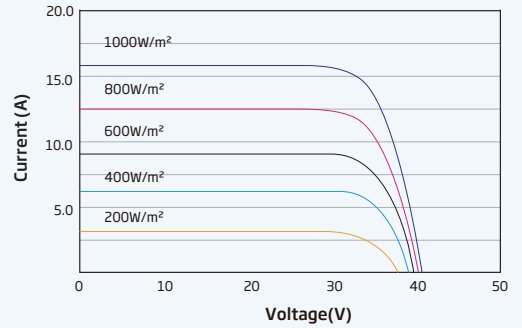
### Trina Solar's Vertex Bifacial Dual Glass Performance Warranty



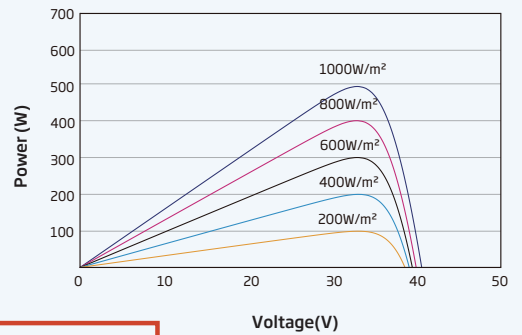
**DIMENSIONS OF PV MODULE(mm)**



**I-V CURVES OF PV MODULE(490W)**



**P-V CURVES OF PV MODULE(490 W)**



**Preliminary**

**ELECTRICAL DATA (STC)**

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

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1.5. \*Measuring tolerance: ±3%.

**ELECTRICAL DATA (NOCT)**

Maximum Power-P <sub>MAX</sub> (Wp)	363	367	370	374	378	381
Maximum Power Voltage-V <sub>MPP</sub> (V)	30.4	30.6	30.8	31.0	31.3	31.5
Maximum Power Current-I <sub>MPP</sub> (A)	11.94	11.98	12.02	12.06	12.08	12.11
Open Circuit Voltage-V <sub>OC</sub> (V)	36.9	37.1	37.3	37.5	37.7	38.0
Short Circuit Current-I <sub>SC</sub> (A)	12.64	12.67	12.70	12.74	12.76	12.78

NOCT: Irradiance at 800W/m<sup>2</sup>, 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	EVA/POE
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 <sup>2</sup> (0.006 inches <sup>2</sup> ), 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 <sub>MAX</sub>	-0.30%/°C
Temperature Coefficient of V <sub>OC</sub>	-0.24%/°C
Temperature Coefficient of I <sub>SC</sub>	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