

# Vertex N

**BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE**

PRODUCT: TSM-NEG19RC.20

PRODUCT RANGE: 570-600W

**600W**

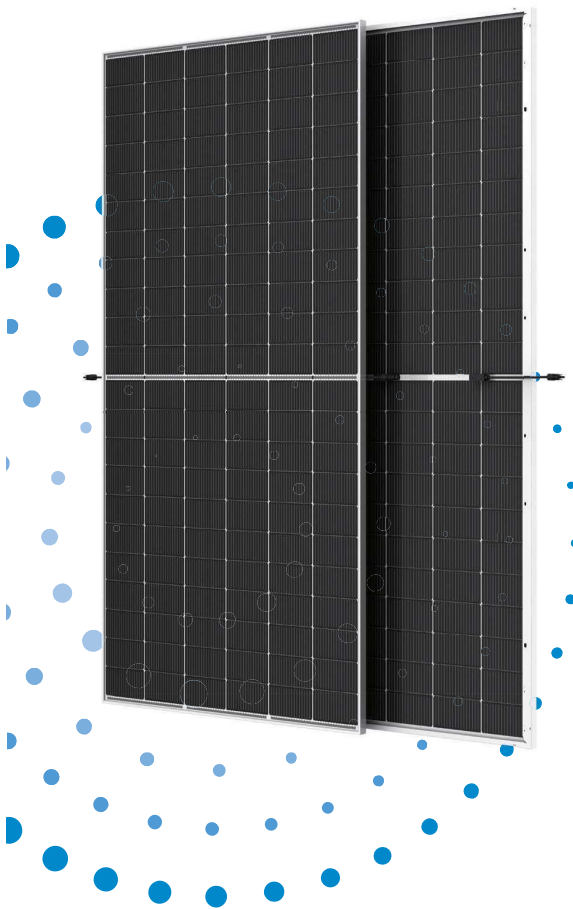
MAXIMUM POWER OUTPUT

**0~+5W**

POSITIVE POWER TOLERANCE

**22.2%**

MAXIMUM EFFICIENCY



### High customer value

- Lower LCOE , reduced BOS cost, better ROI
- Lowest guaranteed first year and annual degradation
- Optimized compatibility with existing mainstream system components



### High power up to 600W

- Up to 22.2% module efficiency
- High density interconnection provides improved power density
- MBB technology improves lighttrapping effect and currentcollection, while lowering series resistance



### High reliability

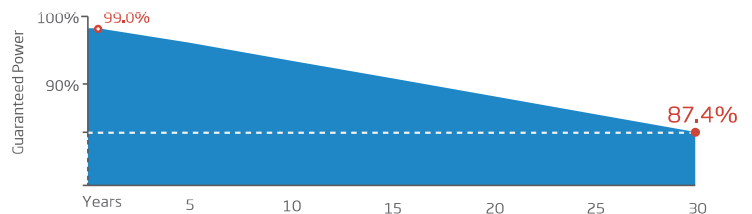
- Minimized micro-cracks with innovative non-destructive cutting technology minimizes micro-cracking
- Ensured PID resistance through improved cell process and module material control
- Resistant to harsh environments
- Mechanical performance up to +5400/-2400 Pa



### High energy yield

- Excellent IAM and low irradiation performance, validated by 3rd party certifications
- The unique design provides optimized energy production under inter-row shading conditions
- Lower temperature coefficient (-0.30%) and operating temperature
- Up to 30% additional power gain from back side

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



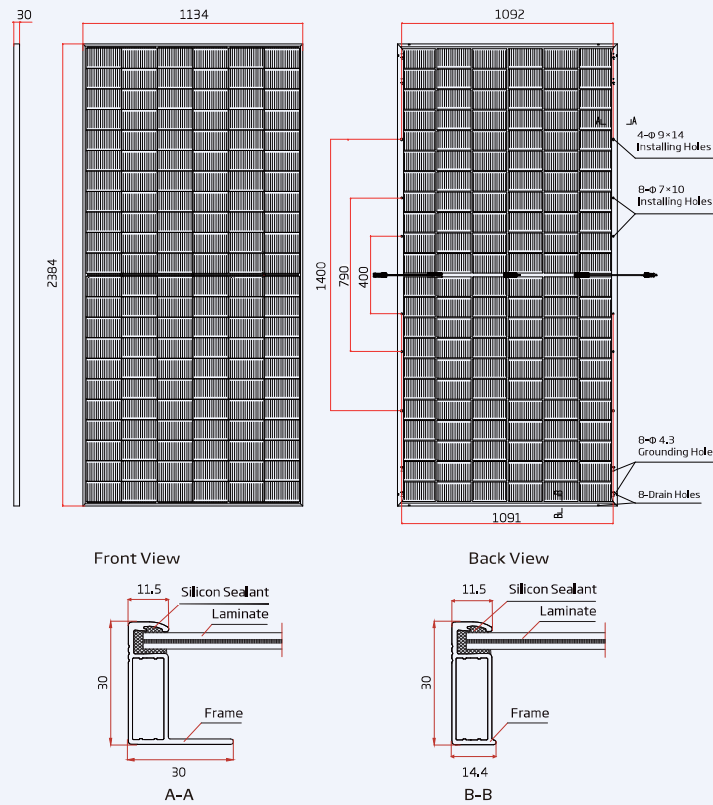
### Comprehensive Products and System Certificates



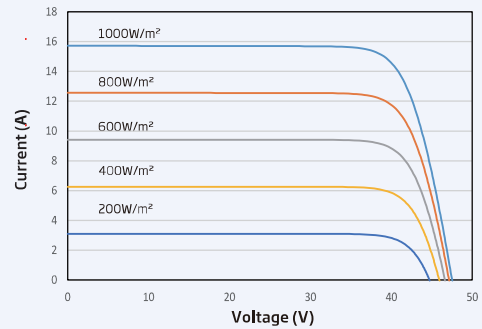
IEC61215/IEC61730/IEC61701/IEC62716/UL61730  
 ISO 9001: Quality Management System  
 ISO 14001: Environmental Management System  
 ISO14064: Greenhouse Gases Emissions Verification  
 ISO45001: Occupational Health and Safety Management System



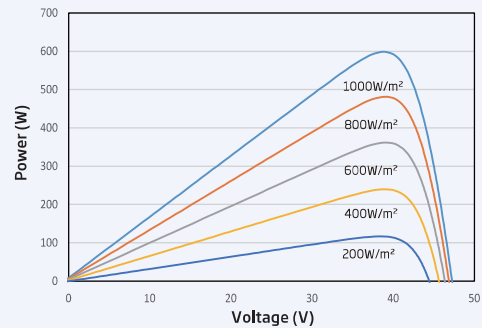
**DIMENSIONS OF PV MODULE (mm)**



**I-V CURVES OF PV MODULE (600W)**



**P-V CURVES OF PV MODULE (600 W)**



**ELECTRICAL DATA (STC)**

Peak Power Watts-P <sub>MAX</sub> (Wp)*	570	575	580	585	590	595	600
Power Tolerance-P <sub>MAX</sub> (W)	0 ~ +5						
Maximum Power Voltage-V <sub>MPP</sub> (V)	38,6	38,9	39,2	39,5	39,7	40,0	40,3
Maximum Power Current-I <sub>MPP</sub> (A)	14,75	14,78	14,79	14,82	14,86	14,89	14,91
Open Circuit Voltage-V <sub>OC</sub> (V)	46,6	46,9	47,2	47,5	47,8	48,1	48,4
Short Circuit Current-I <sub>SC</sub> (A)	15,61	15,63	15,65	15,68	15,72	15,76	15,80
Module Efficiency η <sub>m</sub> (%)	21,1	21,3	21,5	21,6	21,8	22,0	22,2

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, Air Mass AM1,5.

**Electrical characteristics with different power bin (reference to 10% Irradiance ratio)**

Total Equivalent power-P <sub>MAX</sub> (Wp)	616	621	626	632	637	643	648
Maximum Power Voltage-V <sub>MPP</sub> (V)	38,6	38,9	39,2	39,5	39,7	40,0	40,3
Maximum Power Current-I <sub>MPP</sub> (A)	15,93	15,96	15,97	16,01	16,05	16,08	16,10
Open Circuit Voltage-V <sub>OC</sub> (V)	46,6	46,9	47,2	47,5	47,8	48,1	48,4
Short Circuit Current-I <sub>SC</sub> (A)	16,86	16,88	16,90	16,93	16,98	17,02	17,06
Irradiance ratio (rear/front)	10%						

Power Bifaciality: 80±5%

**ELECTRICAL DATA (NOCT)**

Maximum Power-P <sub>MAX</sub> (Wp)	434	438	442	446	450	454	458
Maximum Power Voltage-V <sub>MPP</sub> (V)	36,3	36,5	36,8	37,1	37,3	37,6	37,8
Maximum Power Current-I <sub>MPP</sub> (A)	11,97	11,99	12,00	12,02	12,05	12,08	12,12
Open Circuit Voltage-V <sub>OC</sub> (V)	44,2	44,5	44,7	45,0	45,3	45,6	45,9
Short Circuit Current-I <sub>SC</sub> (A)	12,58	12,59	12,61	12,64	12,67	12,70	12,73

NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s.

**MECHANICAL DATA**

Solar Cells	Monocrystalline 210Rmm N-type
No. of cells	132 cells
Module Dimensions	2384×1134×30 mm (93.86×44.65×1.18 in)
Weight	33,7 kg (74.3lb)
Front Glass	2,0 mm (0,08 in), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant Material	POE/EVA
Back Glass	2,0 mm (0,08 in), Heat Strengthened Glass (White Grid Glass)
Frame	30 mm (1,18 in) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4,0 mm <sup>2</sup> (0,006 in <sup>2</sup> ) Portrait: 350/280 mm (13,78/11,02 in) Landscape: 1400/1400 mm (55,1/55,1 in) *
Connector	MC4 EVO2 / TS4 PLUS / TS4**

\*Length can be customized  
\*\*Customer to choose connector type

**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)
	1500V DC (UL)
Max Series Fuse Rating	30A*

\*This is for customers engineering to decide

**WARRANTY**

- 12 Year Product Workmanship Warranty
- 30 Year Power Warranty
- 1% First year degradation
- 0.40% Annual Power Attenuation

(Please refer to product warranty for details)

**PACKAGING CONFIGURATION**

- Modules per box: 36 pieces
- Modules per 40' container: 504 pieces
- Pallets per 40' container: 14