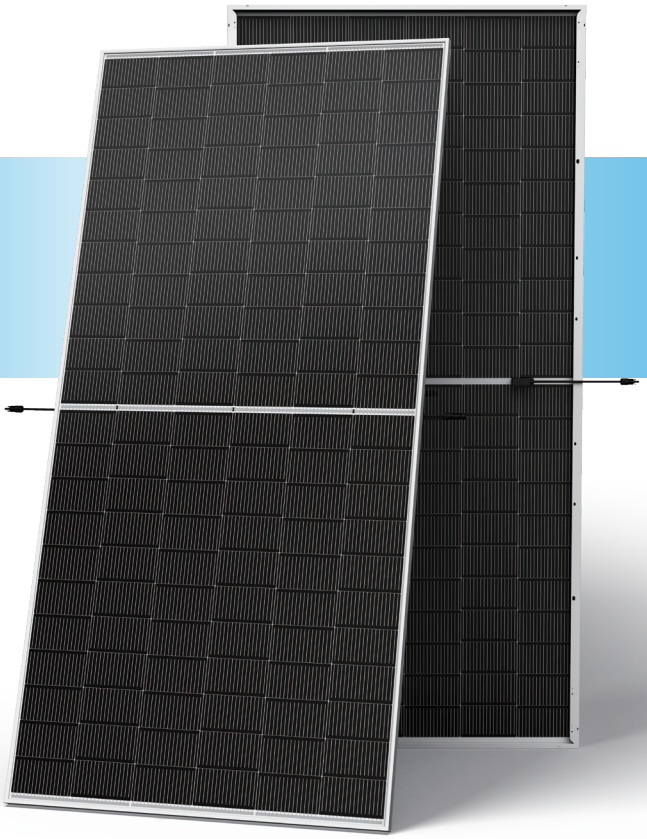
# Vertex N

## N-type i-TOPCon

### BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE



TSM-NEG19RC.20 **605-630W**

**630W** / MAXIMUM POWER OUTPUT

**23.3%** / MAXIMUM EFFICIENCY

### High customer value

- Best partner of 1P tracker, with highest utilization of tracker length
- Low voltage design with higher string power, effectively reducing BOS (Balance of System) and LCOE (Levelized Cost of Energy) by 1%~5%
- Standardized module size with higher container space utilization effectively reduces the freight cost
- Excellent compatibility with existing mainstream system components
- Certified Low-Carbon Footprint

### High power up to 630W

- Up to 23.3% module efficiency , on 210 innovation platform
- Patented i-TOPCon technology with continuous efficiency upgrade, including contact resistance reduction, rear reflection enhancement and edge quality repairment

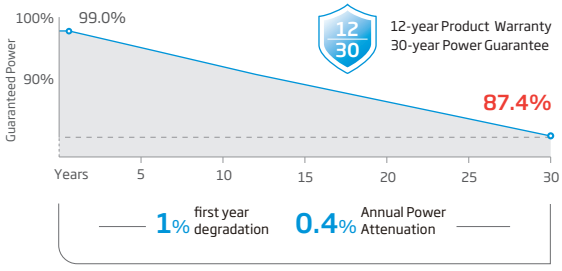
### High reliability

- Minimized micro-cracks with innovative non-destructive cutting technology and high-density packaging
- Reduced risks of hot-spot with half-cut technology
- Certified high resistance against salt, ammonia, sand, PID, LID, LeTID
- Sustainable in harsh environments and extreme weather conditions

### High energy yield

- Excellent low irradiation performance, validated by 3rd party
- Lower temperature coefficient (-0.29%/°C)
- Higher bifaciality, with up to 10%~20% additional power gain from back side depending on albedo
- Reliable dual-glass structure with 30-year power guarantee

### 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
ISO14067: Product Carbon Footprint Limited Assurance
ISO14025: Environmental Product Declaration



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**N-type i-TOPCon BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE**

## ELECTRICAL DATA (STC & NOCT & BNPI)

| Testing Condition | STC | NOCT | BNPI | STC | NOCT | BNPI | STC | NOCT | BNPI | STC | NOCT | BNPI | STC | NOCT | BNPI | STC | NOCT | BNPI |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Peak Power Watts-PMAX(Wp)* | 605 | 462 | 670 | 610 | 466 | 676 | 615 | 470 | 681 | 620 | 474 | 687 | 625 | 478 | 692 | 630 | 482 | 698 |
| Power Selection (W)** | 0 ~ +5 | | | | | | | | | | | | | | | | | |
| Maximum Power Voltage-VMPP (V) | 40.5 | 38.1 | 40.5 | 40.8 | 38.3 | 40.8 | 41.1 | 38.6 | 41.1 | 41.4 | 38.8 | 41.4 | 41.7 | 39.1 | 41.7 | 42.0 | 39.4 | 42.0 |
| Maximum Power Current-IMPP (A) | 14.94 | 12.13 | 16.55 | 14.96 | 12.16 | 16.57 | 14.98 | 12.19 | 16.58 | 14.99 | 12.20 | 16.59 | 15.00 | 12.21 | 16.59 | 15.01 | 12.22 | 16.62 |
| Open Circuit Voltage-VOC (V) | 48.7 | 46.2 | 48.7 | 49.0 | 46.5 | 49.0 | 49.3 | 46.8 | 49.3 | 49.6 | 47.1 | 49.6 | 49.9 | 47.3 | 49.9 | 50.2 | 47.7 | 50.2 |
| Short Circuit Current-ISC (A) | 15.83 | 12.75 | 17.54 | 15.86 | 12.78 | 17.57 | 15.89 | 12.80 | 17.61 | 15.91 | 12.82 | 17.63 | 15.92 | 12.83 | 17.64 | 15.93 | 12.84 | 17.65 |
| Module Efficiency η m (%) | 22.4 | | | 22.6 | | | 22.8 | | | 23.0 | | | 23.1 | | | 23.3 | | |

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5. NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s. BNPI: Irradiance: front 1000W/m², rear 135W/m²,Temperature25°C, Air Mass AM1.5
*Measuring tolerance: ±3%. **Power selection up to: +3%.

## Electrical characteristics with different power bin (reference to 5% & 10% backside power gain)

| Backside Power Gain | 5% | 10% | 5% | 10% | 5% | 10% | 5% | 10% | 5% | 10% | 5% | 10% |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Peak Power Watts-PMAX(Wp) | 635 | 666 | 641 | 671 | 646 | 677 | 651 | 682 | 656 | 688 | 662 | 693 |
| Maximum Power Voltage-VMPP (V) | 40.5 | 40.5 | 40.8 | 40.8 | 41.1 | 41.1 | 41.4 | 41.4 | 41.7 | 41.7 | 42.0 | 42.0 |
| Maximum Power Current-IMPP (A) | 15.69 | 16.43 | 15.71 | 16.46 | 15.73 | 16.48 | 15.74 | 16.49 | 15.75 | 16.50 | 15.76 | 16.51 |
| Open Circuit Voltage-VOC (V) | 48.7 | 48.7 | 49.0 | 49.0 | 49.3 | 49.3 | 49.6 | 49.6 | 49.9 | 49.9 | 50.2 | 50.2 |
| Short Circuit Current-ISC (A) | 16.62 | 17.41 | 16.65 | 17.45 | 16.68 | 17.48 | 16.71 | 17.50 | 16.72 | 17.51 | 16.73 | 17.52 |

Power Bifaciality:80±5%.

## TEMPERATURE RATINGS

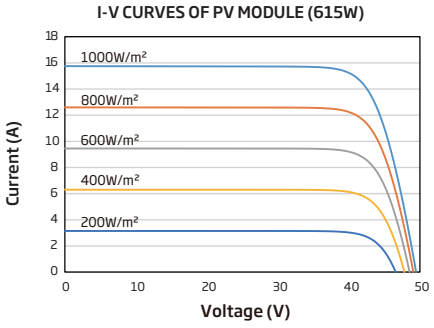
| | |
|---|---|
| NOCT (Nominal Operating Cell Temperature) | 43℃ (±2℃) |
| Temperature Coefficient of PMAX | - 0.29% /℃ |
| Temperature Coefficient of VOC | - 0.24% /℃ |
| Temperature Coefficient of ISC | 0.04% /℃ |

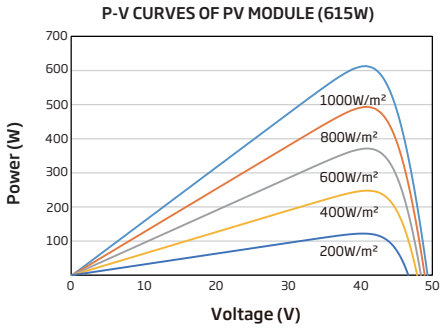
Due to different testing methods, the actual performances might differ from the declared specifications.

## MAXIMUM RATINGS

| | |
|---|---|
| Operational Temperature | -40~+85℃ |
| Maximum System Voltage | 1500V DC (IEC) |
| | 1500V DC (UL) |
| Max Series Fuse Rating | 35A |

## CURVES OF PV MODULE

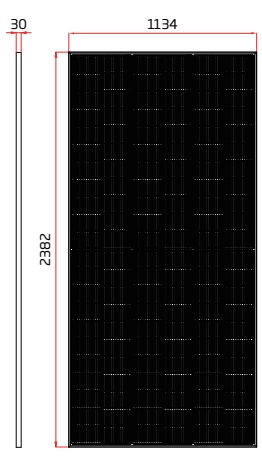


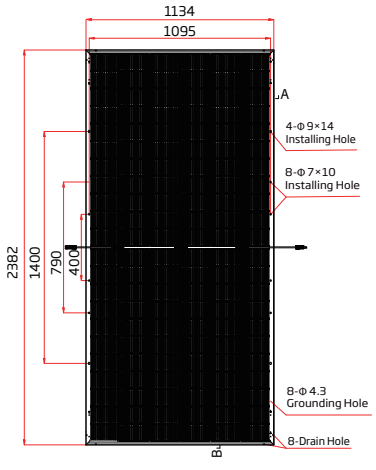

## MECHANICAL DATA

| | |
|---|---|
| Solar Cells | N-type i-TOPCon Monocrystalline |
| No. of cells | 132 cells |
| Module Dimensions | 2382×1134×30 mm (93.78×44.65×1.18 inches) |
| Weight | 33.0 kg (72.8 lb) |
| Front Glass | 2.0 mm (0.08 inches), AR Coating Heat Strengthened Glass |
| Back Glass | 2.0 mm (0.08 inches), Heat Strengthened Glass (White Coating) |
| Frame | 30mm(1.18 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 Plus / TS4* |
| Packaging | Modules per box: 36 pieces Modules per 40' container: 720 pieces |

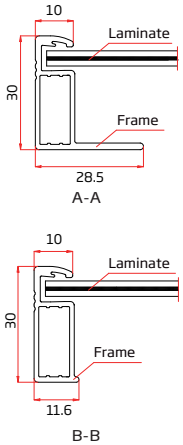
*Please refer to regional datasheet for specified connector.




Front View




Back View





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