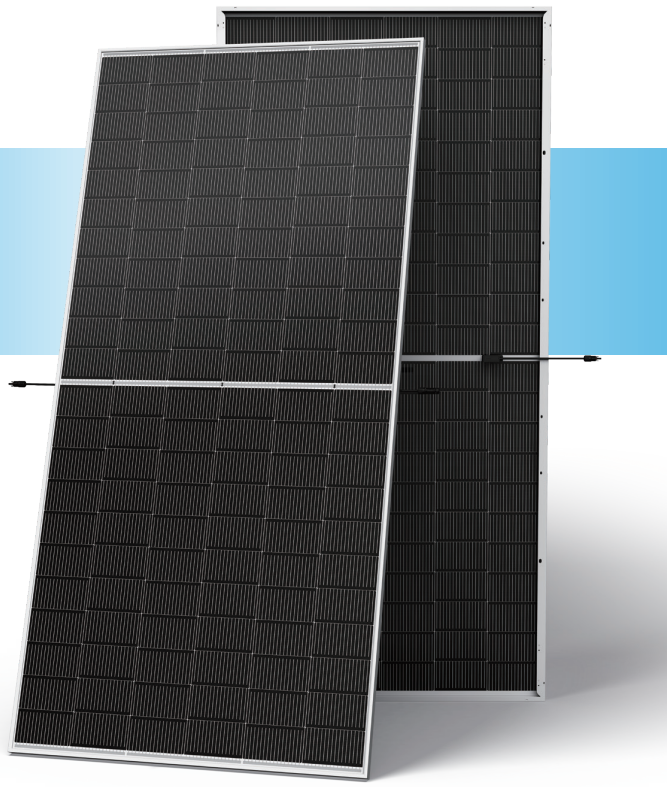
Vertex N



N-type i-TOPCon

BIFACIAL DUAL GLASS MONOCRYSTALLINE MODULE

TSM-NEG19RC.20 **610-635W**

635W / MAXIMUM POWER OUTPUT

23.5% / 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 635W

- Up to 23.5% 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

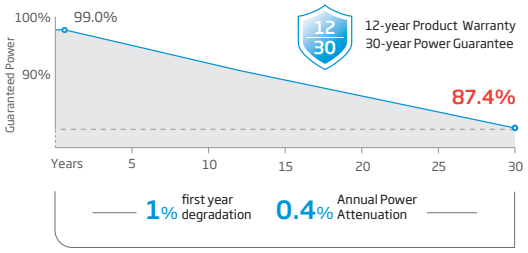
High reliability

- 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

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.
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Vertex N

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)*	610	465	676	615	469	681	620	473	687	625	477	692	630	481	698	635	487	704
Power Selection (W)**	0 ~ +5																	
Maximum Power Voltage-VMPP (V)	39.79	37.60	39.79	39.97	37.80	39.97	40.24	37.90	40.24	40.46	38.10	40.46	40.68	38.30	40.68	40.84	38.60	40.84
Maximum Power Current-IMPP (A)	15.33	12.38	17.00	15.39	12.43	17.05	15.41	12.47	17.07	15.45	12.52	17.12	15.49	12.57	17.16	15.55	12.60	17.23
Open Circuit Voltage-VOC (V)	48.09	45.70	48.09	48.29	45.90	48.29	48.50	46.10	48.50	48.70	46.30	48.70	48.90	46.50	48.90	49.10	46.60	49.10
Short Circuit Current-ISC (A)	16.14	13.00	17.88	16.20	13.05	17.95	16.26	13.10	18.02	16.32	13.15	18.08	16.38	13.20	18.15	16.44	13.25	18.22
Module Efficiency η m (%)	22.6			22.8			23.0			23.1			23.3			23.5		

STC: Irradiance 1000W/m2, Cell Temperature 25℃, Air Mass AM1.5. NOCT: Irradiance at 800W/m², Ambient Temperature 20℃, Wind Speed 1m/s. BNPI: Irradiance: front 1000W/m², rear 135W/m², Temperature25℃, 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)	641	671	646	677	651	682	656	688	662	693	667	699
Maximum Power Voltage-VMPP (V)	39.79	39.79	39.97	39.97	40.24	40.24	40.46	40.46	40.68	40.68	40.84	40.84
Maximum Power Current-IMPP (A)	16.10	16.86	16.16	16.93	16.18	16.95	16.22	17.00	16.26	17.04	17.26	18.08
Open Circuit Voltage-VOC (V)	48.09	48.09	48.29	48.29	48.50	48.50	48.70	48.70	48.90	48.90	49.10	49.10
Short Circuit Current-ISC (A)	16.95	17.75	17.01	17.82	17.07	17.89	17.14	17.95	17.20	18.02	16.33	17.11

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% /℃

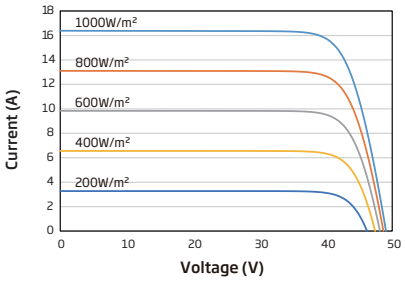
Due to different testing methods, the actual performances might differ from the declared specifications.

APPLICATION CONDITIONS

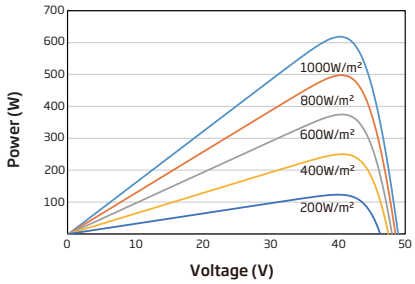
Operating Temperature	-40~+70℃
Maximum System Voltage	1500V DC (IEC)
	1500V DC (UL)
Max Series Fuse Rating	35A

CURVES OF PV MODULE

I-V CURVES OF PV MODULE (620W)



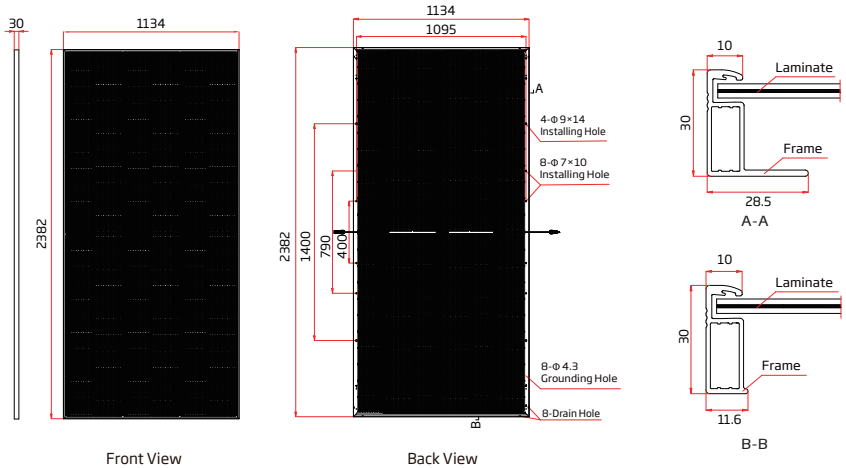
P-V CURVES OF PV MODULE (620W)



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.



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