

Vertex N

N-type i-TOPCon bifacial dual glass
Monocrystalline module

PRODUCT: TSM-NEG19RC.20

POWER RANGE: 590-620W

620W

MAXIMUM POWER OUTPUT

0~+5W

POSITIVE POWER TOLERANCE

23.0%

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 620W

- Up to 23.0% module efficiency
- High density interconnection provides improved power density
- MBB technology improves lighttrapping effect and currentcollection, while lowering series resistance



High reliability

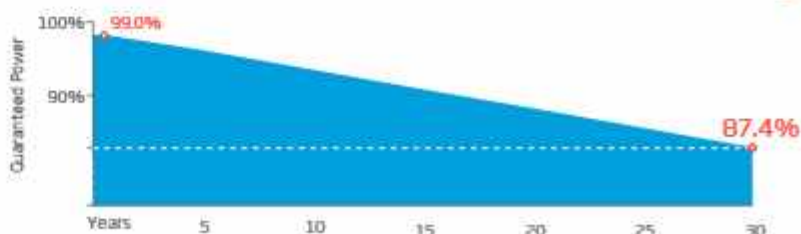
- Minimized micro-cracks with innovative non-destructive cutting technology minimizes micro-cracking
- Ensured PID resistance through improved cell process and module material control
- Resistant to harsh environments
- Mechanical performance up to +5400/-2400 Pa



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 (-0.29%/°C) and operating temperature
- Up to 30% additional power gain from back side

Trina Solar's Vertex Bifacial Dual Glass Performance Warranty



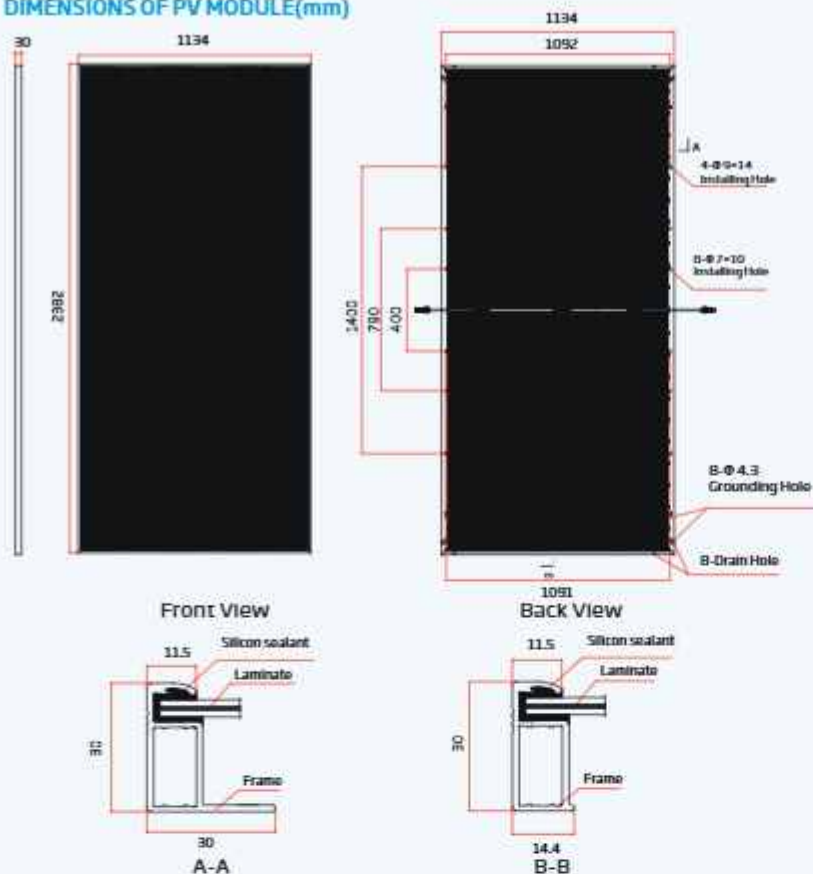
Comprehensive Products and System Certificates



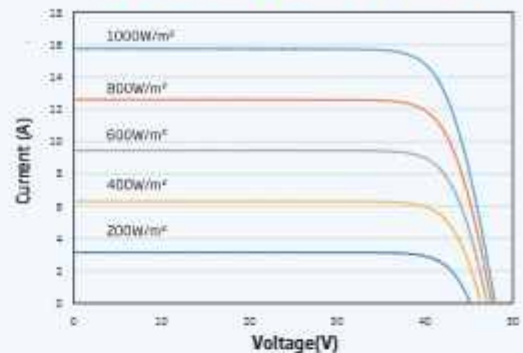
IEC61215/IEC61730/IEC61701/IEC62716/UL61730
 ISO 9001: Quality Management System
 ISO 14001: Environmental Management System
 ISO14064: Greenhouse Gases Emissions Verification
 ISO45001: Occupational Health and Safety Management System



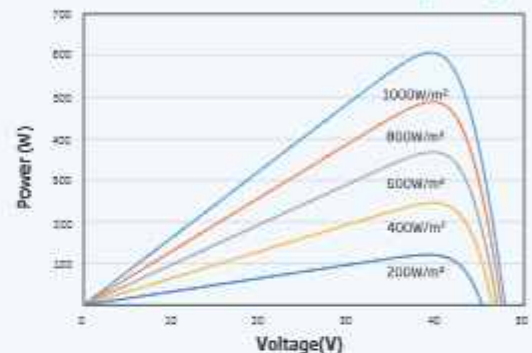
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE (605 W)



P-V CURVES OF PV MODULE (605 W)



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	33.7kg (74.3 lb)
Front Glass	2.0 mm (0.08 inches), High Transmittance, AR Coated Dual Strengthened Glass
Encapsulant material	POE/EVA
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)

Frame	30mm(1.18 inches) Anodized Aluminium Alloy
J-Box	IP69 rated
Cables	Photovoltaic Technology Cable 4.0 mm ² (0.006 in ²) Portrait: 350/290 mm (13.78/11.02 in) Landscape: 1400/1400 mm (55.1/55.1 in)*
Connector	MC4 EVO2 / TS4 Plus / TS4**
Fire Type	Type 29

*Please refer to regional datasheet for specified connector. **Customer to choose connector type

ELECTRICAL DATA (STC & NOCT)

Testing Condition	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Peak Power Watts - P _{max} (Wp)*	590	450	595	454	600	459	605	462	610	466	615	470	620	474
Power Tolerance - P _{max} (W)	0 ~ +5													
Maximum Power Voltage - V _{mp} (V)	39.7	37.4	40.0	37.6	40.3	37.9	40.5	38.1	40.8	38.3	41.1	38.6	41.4	38.8
Maximum Power Current - I _{mp} (A)	14.86	12.05	14.89	12.07	14.91	12.11	14.94	12.13	14.96	12.16	14.98	12.19	14.99	12.20
Open Circuit Voltage - V _{oc} (V)	47.8	45.4	48.1	45.7	48.4	46.0	48.7	46.2	49.0	46.5	49.3	46.8	49.6	47.1
Short Circuit Current - I _{sc} (A)	15.72	12.67	15.76	12.69	15.80	12.73	15.83	12.75	15.86	12.78	15.89	12.80	15.91	12.82
Module Efficiency η _m (%)	21.8		22.0		22.2		22.4		22.6		22.8		23.0	

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5. NOCT: Irradiance at 800W/m², Ambient Temperature 45°C, Wind Speed 1m/s. *Measuring tolerance: ±1%.

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%	5%	10%
Total Equivalent power - P _{max} (Wp)	620	649	625	655	630	660	635	666	641	671	646	677	651	682
Maximum Power Voltage - V _{mp} (V)	39.7	39.7	40.0	40.0	40.3	40.3	40.5	40.5	40.8	40.8	41.1	41.1	41.4	41.4
Maximum Power Current - I _{mp} (A)	15.60	16.35	15.63	16.38	15.66	16.40	15.69	16.43	15.71	16.46	15.73	16.48	15.74	16.49
Open Circuit Voltage - V _{oc} (V)	47.8	47.8	48.1	48.1	48.4	48.4	48.7	48.7	49.0	49.0	49.3	49.3	49.6	49.6
Short Circuit Current - I _{sc} (A)	16.51	17.29	16.55	17.34	16.59	17.38	16.62	17.41	16.65	17.45	16.68	17.48	16.71	17.50

Power tolerance: ±0.115%

TEMPERATURE RATINGS

NOCT (Standard Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of P _{max}	-0.29%/°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) 1500V DC (UL)
Max Series Fuse Rating	30A*

*This is for customer's 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	540 pieces
Pallets per 40' container	15 pieces

SOFAR 1~4KTL2-G3

1.1 / 1.6 / 2.2 / 2.7 / 3 / 3.3 / 4KW

SINGLE-PHASE SINGLE MPPT

PRELIMINARY



Product advantages

- Max. efficiency up to 97.7%
- Lightweight, quick and easy to install
- 140% DC overload
- IP65 design for outdoor
- RS485
- Feed-in limitation function



Model	SOFAR 1.1KTL2-G3	SOFAR 1.6KTL2-G3	SOFAR 2.2KTL2-G3	SOFAR 2.7KTL2-G3	SOFAR 3KTL2-G3	SOFAR 3.3KTL2-G3	SOFAR 4KTL2-G3
Input (DC)							
Max. Input voltage	500V			550V			
Rated Input voltage				360V			
Start-up voltage				70V			
MPPT operating voltage range	50-500V			50-550V			
Number of MPPT trackers				1			
Number of DC inputs				1			
Max. Input MPPT current	13A	14A					15A
Max. Input short circuit current	17.5A			20A			
Output (AC)							
Rated output power	1100W	1600W	2200W	2700W	3000W	3300W	4000W
Max. apparent power	1100VA	1600VA	2200VA	2700VA	3000VA	3300VA	4000VA
Max. output current	5.3A	7.7A	10.6A	13A	14.5A	16A	19.3A
Rated output voltage	L/N/PE:220Vac, 230Vac						
Output voltage range	180Vac-270Vac						
Rated output frequency	50/60Hz						
Output frequency range	45Hz-55Hz/55Hz-65Hz						
Active power adjustable range	0-100%						
THDI	<3%						
Power factor	0.8 leading-0.8 lagging						
Efficiency							
Max. efficiency	97.3%			97.7%			
European efficiency	96.7%			97.2%			
Protection							
DC reverse polarity protection				Yes			
Anti-islanding protection				Yes			
Leakage current protection				Yes			
Ground fault monitoring				Yes			
PV array string fault monitoring				Yes			
DC switch				Yes			
SPD	PV: type III, AC: type III						
General Data							
Ambient temperature range	-30°C~+60°C						
Self-consumption at night	<1W						
Topology	Transformerless						
Degree of protection	IP65						
Allowable relative humidity range	0-100%						
Max. operating altitude	2000m						
Cooling	Natural						
Dimension (W-H-D)	305*260.5*118mm			321*260.5*151.5mm			321*260.5*151.5 mm
Weight	>6kg			<7kg			<7.5kg
Display	LCD+LED						
Communication	RS485, Wi-Fi						
Standard	IEC 62109-1/-2, IEC/EN 61000-6-1/-3, IEC/EN 61000-3-2/-3/-11/-12, IEC 61727, IEC 62116, IEC 60068, IEC 61683						

*All specifications are subject to change without notice.

