PROGETTAZIONE DEFINITIVA E STUDIO DI IMPATTO AMBIENTALE
PER RICHIESTA DI AUTORIZZAZIONE UNICA
DELL'IMPIANTO AGRIVOLTAICO DA 40 MW
IN ZONA INDUSTRIALE DI PRATO SARDO NEL COMUNE DI NUORO (NU)

PROGETTO DEFINITIVO

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COMMITTENTE: NUORO SOLAR

PROGETTISTA: TECHNITAL

ORDINE INGEGNERI VERONA E PROVINCIA
Dott. Ing. SIMONE VENTURINI
A 2515

DIRETTORE TECNICO
Dott. Ing. Simone Venturini

TITOLO ELABORATO:

BROCHURE MODULI AGRIVOLTAICI

ELABORATO n°: BI029F-D-NUO-SH-02-r00

NOME FILE:

SCALA: ----

DATA: Giugno 2023

REVISIONE N.	DATA	DESCRIZIONE	ELABORATO	CONTROLLATO	APPROVATO
00	Giugno 2023	Prima Emissione	E. Guiot	M. Sandri	S. Venturini
01					
02					
03					
04					

Preliminary

Mono Multi Solutions

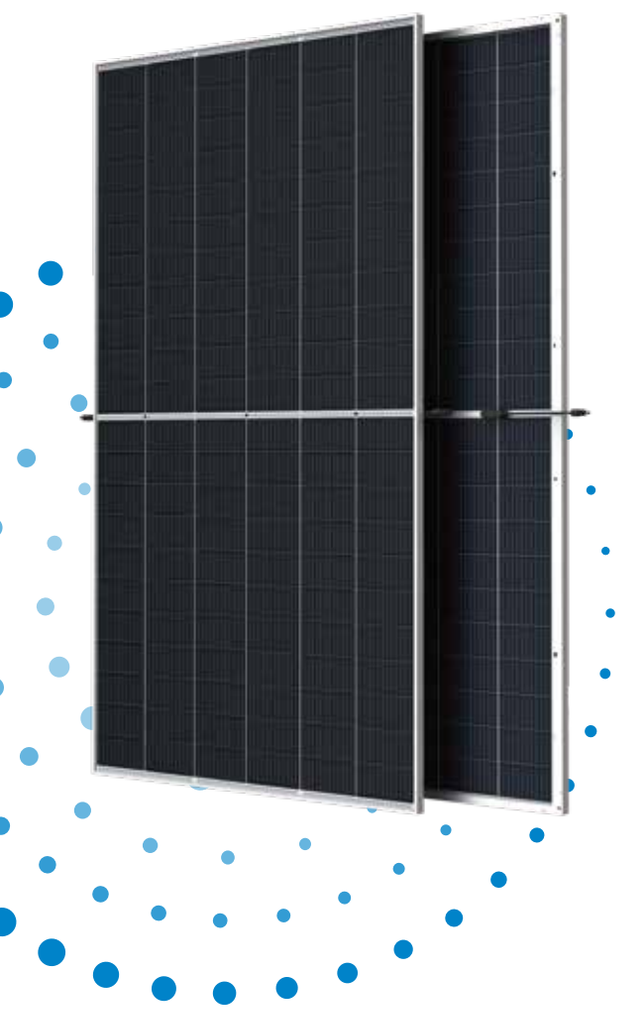
Vertex N

BIFACIAL DUAL GLASS MODULE

PRODUCT: TSM-NEG21C.20

PRODUCT RANGE: 665-685W

685W	0~+5W	22.1%
MAXIMUM POWER OUTPUT	POSITIVE POWER TOLERANCE	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 685W

- Up to 22.1% module efficiency with high density interconnect technology
- Multi-busbar technology for better light trapping effect, lower series resistance and improved current collection

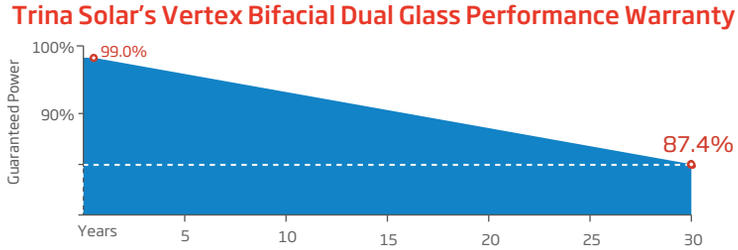
High reliability

- 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

- Excellent product bifaciality and low irradiation performance, validated by 3rd party
- 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
- Up to 30% additional power gain from back side depending on albedo

Trina Solar's Vertex Bifacial Dual Glass Performance Warranty



Comprehensive Products and System Certificates

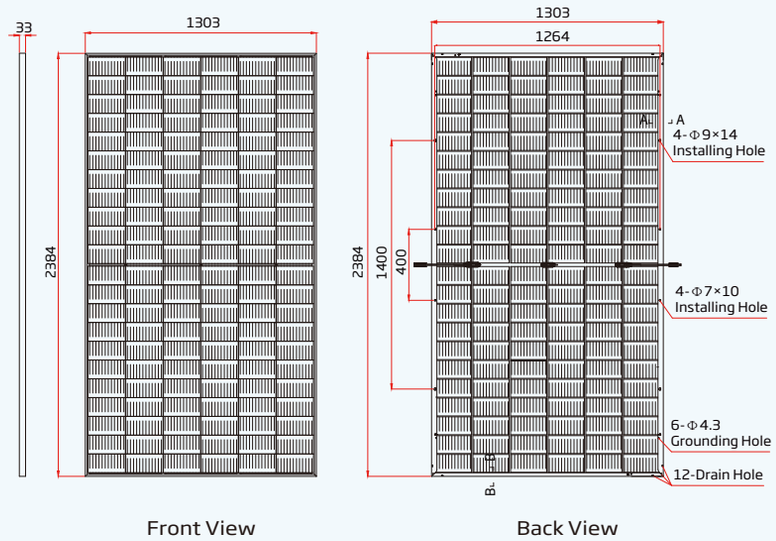
IEC61215/IEC61730/IEC61701/IEC62716
ISO 9001: Quality Management System
ISO 14001: Environmental Management System
ISO14064: Greenhouse Gases Emissions Verification
ISO45001: Occupational Health and Safety Management System

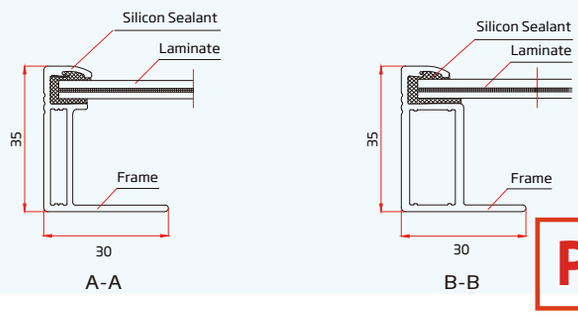
Trinasolar

Vertex N

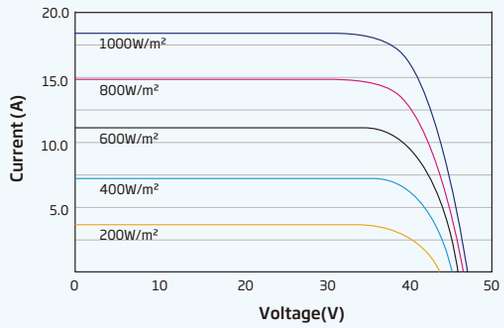
BIFACIAL DUAL GLASS MODULE

DIMENSIONS OF PV MODULE(mm)

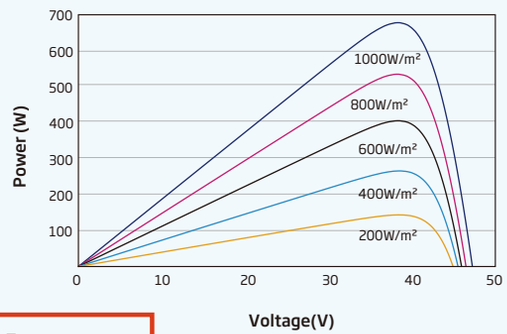




I-V CURVES OF PV MODULE(675W)



P-V CURVES OF PV MODULE(675 W)



Preliminary

ELECTRICAL DATA (STC)

Peak Power Watts-PMAX (Wp)*	665	670	675	680	685
Power Tolerance-PMAX (W)			0 ~ +5		
Maximum Power Voltage-VMPP (V)	39.0	39.2	39.4	39.6	39.8
Maximum Power Current-IMPP (A)	17.06	17.09	17.12	17.16	17.19
Open Circuit Voltage-VOC (V)	46.8	47.0	47.2	47.4	47.7
Short Circuit Current-ISC (A)	18.07	18.10	18.14	18.18	18.21
Module Efficiency η m (%)	21.4	21.6	21.7	21.9	22.1

STC: Irradiance 1000W/m2, Cell Temperature 25°C, Air Mass AM1.5. *Measuring tolerance: ±3%.

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

Total Equivalent power -PMAX (Wp)	718	724	729	734	740
Maximum Power Voltage-VMPP (V)	39.0	39.2	39.4	39.6	39.8
Maximum Power Current-IMPP (A)	18.42	18.46	18.49	18.53	18.57
Open Circuit Voltage-VOC (V)	46.8	47.0	47.2	47.4	47.7
Short Circuit Current-ISC (A)	19.51	19.55	19.59	19.63	19.67
Irradiance ratio (rear/front)			10%		

Product Bifaciality:80±5%.

ELECTRICAL DATA (NOCT)

Maximum Power-PMAX (Wp)	506	510	514	517	521
Maximum Power Voltage-VMPP (V)	36.6	36.8	37.0	37.2	37.3
Maximum Power Current-IMPP (A)	13.84	13.86	13.89	13.91	13.94
Open Circuit Voltage-VOC (V)	44.4	44.5	44.7	44.9	45.2
Short Circuit Current-ISC (A)	14.56	14.59	14.62	14.65	14.67

NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

MECHANICAL DATA

Solar Cells	Monocrystalline
No. of cells	132 cells
Module Dimensions	2384×1303×33 mm (93.86×51.30×1.30 inches)
Weight	38.7 kg (85.3 lb)
Front Glass	2.0 mm (0.08 inches), High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	EVA/POE
Back Glass	2.0 mm (0.08 inches), Heat Strengthened Glass (White Grid Glass)
Frame	35mm(1.30 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm² (0.006 inches²), Portrait: 280/280 mm(13.78/11.02 inches) Length can be customized
Connector	MC4 EVO2 / TS4*

*Please refer to regional datasheet for specified connector.

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of PMAX	- 0.30%/°C
Temperature Coefficient of VOC	- 0.24%/°C
Temperature Coefficient of ISC	0.04%/°C

MAXIMUMRATINGS

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

WARRANTY

12 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 CONFIGUREATION

Modules per box: 31 pieces

Modules per 40' container: 558 pieces

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

Version number: TSM_EN_2021_PA8

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