

520 W

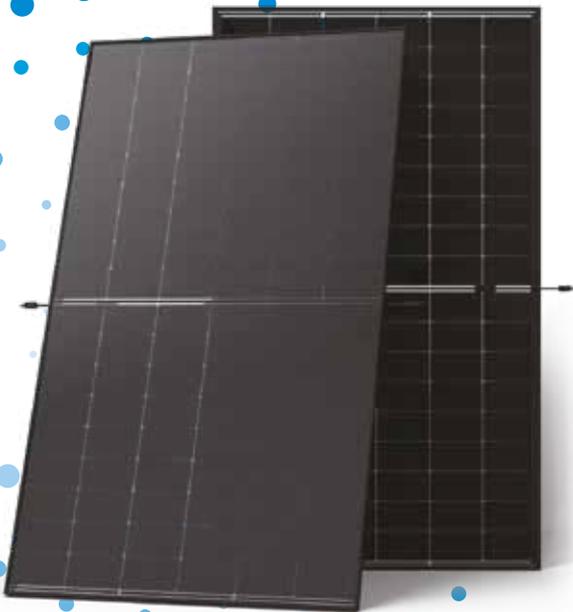
MAXIMUM POWER OUTPUT

0/+5 W

POSITIVE POWER TOLERANCE

23.4 %

MAXIMUM EFFICIENCY



Optimal Size for Commercial & Industrial Rooftops

- Compact module design with medium size for lower total system cost and shorter payback time
- Low voltage design for high string power



Lightweight Dual-glass Design, High Reliability

- Excellent fire resistance; durability in harsh environmental conditions and high temperature or high humidity areas
- Up to 5,400 Pa snow load and 2,400 Pa wind load (test loads)
- 25 years product warranty



Maximized Energy Harvest

- High module power: Up to 520 W, 23.4 % module efficiency with n type i-TOPCon technology
- Maximum 1 % first-year degradation and 0.4 % annual degradation
- 30 years power warranty



Universal Solution for Rooftop Systems

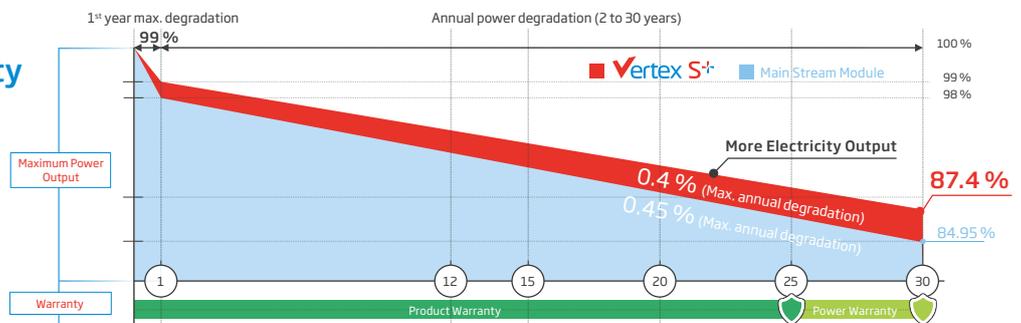
- Designed for compatibility with existing mainstream inverters, optimizers and mounting systems
- Easy to handle (length below 2 meters) and install on roofs with excellent size and light weight
- Flexible installation solutions for system deployment

Extended Vertex S+ Warranty

1 %
1st year max. degradation

0.4 %
Max. annual degradation from year 2 to 30

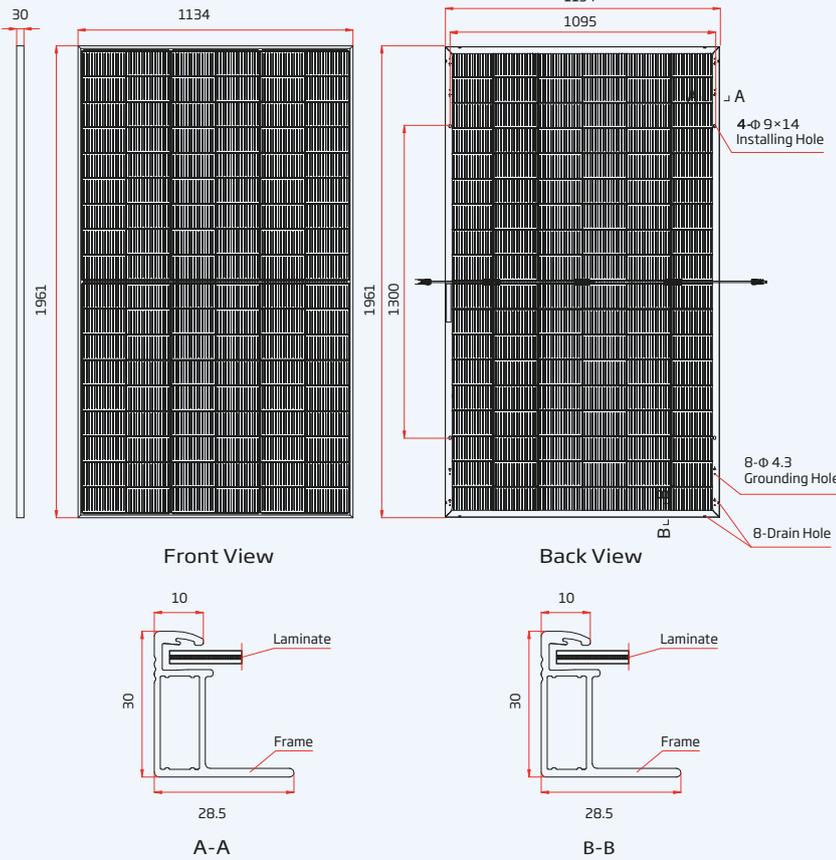
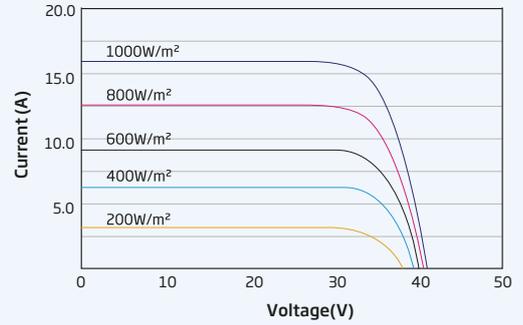
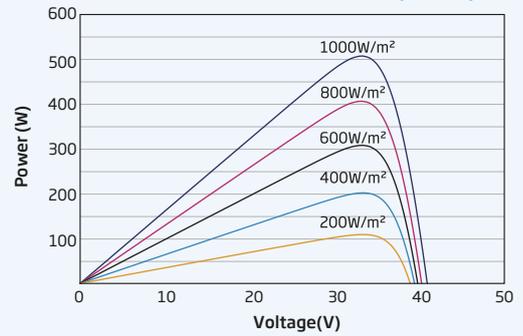
25 Years
Product Workmanship Warranty



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

DIMENSIONS OF PV MODULE (mm)

I-V CURVES OF PV MODULE (510 W)

P-V CURVES OF PV MODULE (510 W)

MECHANICAL DATA

Solar Cells	N-type i-TOPCon monocrystalline	Frame	30 mm Anodized Aluminium Alloy, Black
No. of cells	108 cells	J-Box	IP 68 rated, 3 bypass diodes
Module Dimensions	1961×1134×30 mm	Cables	Photovoltaic Technology Cable 4.0 mm ² Landscape: 1300/1300 mm Portrait 200/320 mm*
Weight	23.5 kg	Connector	TS4 Plus / TS4 / MC4 EVO2*
Front Glass	1.6 mm, AR Coated Heat Strengthened Glass		
Back Glass	1.6 mm, Heat Strengthened Glass		

*Special order only

ELECTRICAL DATA (STC & NOCT & BNPI)

Testing Condition	TSM-495 NEG18RC.27			TSM-500 NEG18RC.27			TSM-505 NEG18RC.27			TSM-510 NEG18RC.27			TSM-515 NEG18RC.27			TSM-520 NEG18RC.27		
	STC	NOCT	BNPI															
Peak Power Watts-P _{MAX} (Wp)*	495	378	548	500	382	554	505	386	559	510	390	565	515	394	570	520	396	576
Power Selection (W)**	0 ~ +5																	
Maximum Power Voltage-V _{MPP} (V)	33.1	31.3	33.1	33.3	31.5	33.3	33.5	31.8	33.5	33.7	31.9	33.7	33.9	32.2	33.9	34.1	32.3	34.1
Maximum Power Current-I _{MPP} (A)	14.97	12.08	16.55	15.03	12.11	16.63	15.09	12.15	16.68	15.14	12.21	16.77	15.2	12.23	16.83	15.25	12.26	16.90
Open Circuit Voltage-V _{OC} (V)	39.8	37.7	39.8	40.1	38.0	40.1	40.3	38.3	40.3	40.6	38.5	40.6	40.9	38.8	40.9	41.2	39.0	41.2
Short Circuit Current-I _{SC} (A)	15.83	12.76	17.57	15.86	12.78	17.61	15.89	12.81	17.65	15.93	12.84	17.65	15.96	12.86	17.68	15.99	12.89	17.72
Module Efficiency η _m (%)	22.3			22.5			22.7			22.9			23.2			23.4		

 STC: Irradiance 1000 W/m², Cell Temperature 25 °C, Air Mass AM1.5. NOCT: Irradiance at 800 W/m², Ambient Temperature 20 °C, Wind Speed 1 m/s. BNPI: Irradiance front 1000 W/m², rear 135 W/m², Temperature 25 °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%	5%	10%	5%	10%	5%	10%	5%	10%	5%	10%	5%	10%	5%	10%	5%	10%	5%	10%
Total Equivalent power -P _{MAX} (Wp)	520	545	525	550	530	556	536	561	541	567	546	572	551	578	556	584	561	590	566	596
Maximum Power Voltage-V _{MPP} (V)	33.1	33.1	33.3	33.3	33.5	33.5	33.7	33.7	33.9	33.9	34.1	34.1	34.3	34.3	34.5	34.5	34.7	34.7	34.9	34.9
Maximum Power Current-I _{MPP} (A)	15.72	16.47	15.78	16.53	15.84	16.60	15.90	16.65	15.96	16.72	16.01	16.78	16.07	16.84	16.13	16.90	16.19	16.96	16.25	17.02
Open Circuit Voltage-V _{OC} (V)	39.8	39.8	40.1	40.1	40.3	40.3	40.6	40.6	40.9	40.9	41.2	41.2	41.5	41.5	41.8	41.8	42.1	42.1	42.4	42.4
Short Circuit Current-I _{SC} (A)	16.62	17.41	16.65	17.45	16.68	17.48	16.73	17.52	16.78	17.56	16.83	17.60	16.88	17.64	16.93	17.68	16.98	17.72	17.03	17.76

Power Bifaciality: 80 ±5%.

TEMPERATURE RATINGS

NOCT (Nominal 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 ~ +70 °C
Maximum System Voltage	1500 V DC (IEC)
Max Series Fuse Rating	30 A

WARRANTY

25 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 CONFIGURATION

Modules per box: 36 pieces
Modules per 40' container: 864 pieces

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

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