

# 520 W

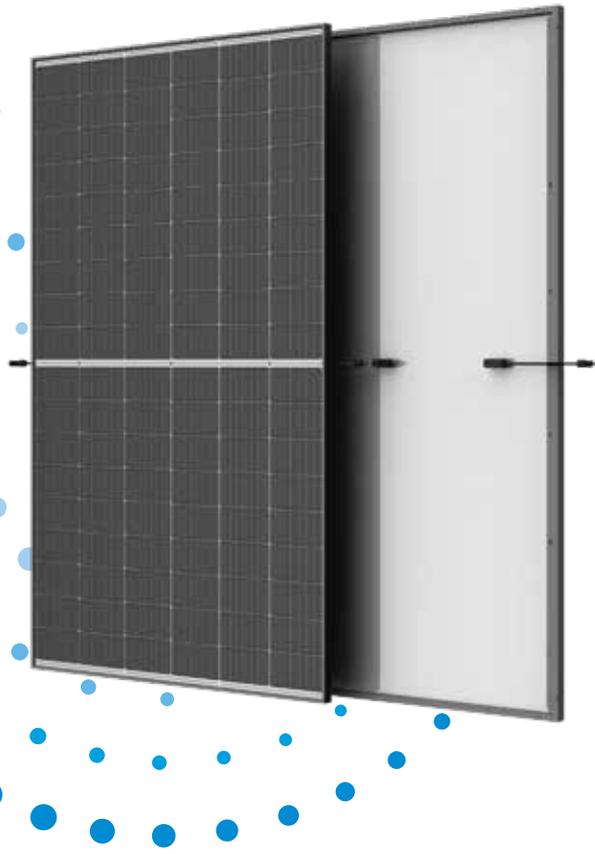
MAXIMUM POWER OUTPUT

# 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

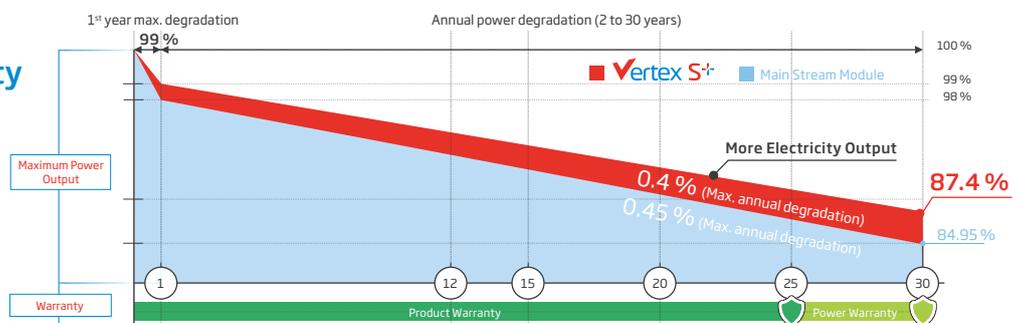
- Designed for compatibility with existing mainstream inverters, optimizers and mounting systems
- Easy to handle (length below 2 meters) and install on roofs with excellent size and light weight
- Flexible installation solutions for system deployment

## Extended Vertex S<sup>+</sup> Warranty

**1 %**  
1<sup>st</sup> year max. degradation

**0.4 %**  
Max. annual degradation from year 2 to 30

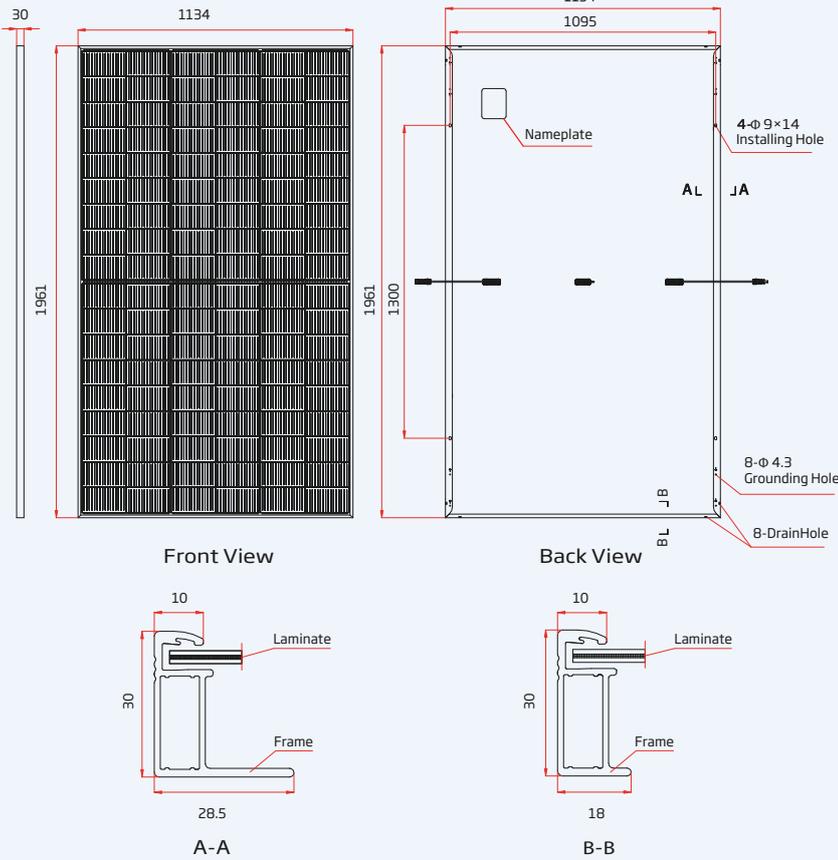
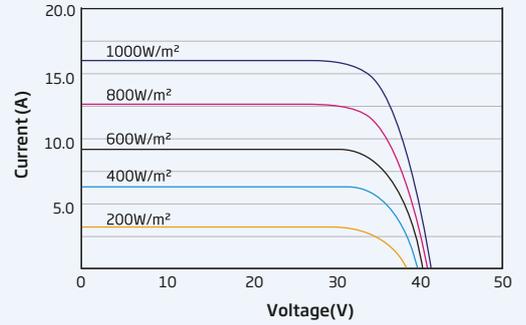
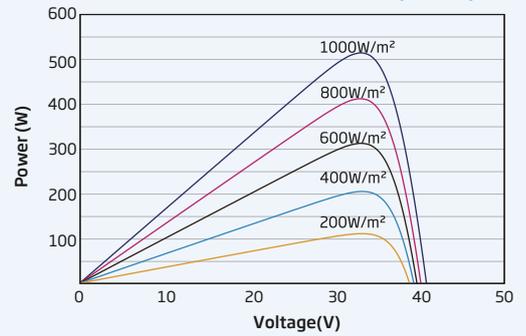
**25 Years**  
Product Workmanship Warranty



## 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)**


ELECTRICAL DATA (STC)	TSM-490	TSM-495	TSM-500	TSM-505	TSM-510	TSM-515	TSM-520
	NEG18R.28						
Peak Power Watts- $P_{MAX}$ (Wp)*	490	495	500	505	510	515	520
Power Selection (W)**	0/+5						
Maximum Power Voltage- $V_{MPP}$ (V)	32.9	33.1	33.3	33.5	33.7	33.9	34.1
Maximum Power Current- $I_{MPP}$ (A)	14.91	14.97	15.03	15.09	15.14	15.20	15.25
Open Circuit Voltage- $V_{oc}$ (V)	39.6	39.8	40.1	40.3	40.6	40.9	41.2
Short Circuit Current- $I_{sc}$ (A)	15.80	15.83	15.86	15.89	15.93	15.96	15.99
Module Efficiency $\eta_m$ (%)	22.0	22.3	22.5	22.7	22.9	23.2	23.4

STC: Irradiance 1000 W/m<sup>2</sup>, Cell Temperature 25 °C, Air Mass AM 1.5.  
\*Measuring tolerance: ±3%. \*\*Power selection up to: +3%

ELECTRICAL DATA (NOCT)	TSM-490	TSM-495	TSM-500	TSM-505	TSM-510	TSM-515	TSM-520
	NEG18R.28						
Maximum Power- $P_{MAX}$ (Wp)	375	378	382	386	390	394	396
Maximum Power Voltage- $V_{MPP}$ (V)	31.0	31.3	31.5	31.8	31.9	32.2	32.3
Maximum Power Current- $I_{MPP}$ (A)	12.06	12.08	12.11	12.15	12.21	12.23	12.26
Open Circuit Voltage- $V_{oc}$ (V)	37.6	37.7	38.0	38.3	38.5	38.8	39.0
Short Circuit Current- $I_{sc}$ (A)	12.74	12.76	12.78	12.81	12.84	12.86	12.89

NOCT: Irradiance at 800 W/m<sup>2</sup>, Ambient Temperature 20 °C, Wind Speed 1 m/s.

**MECHANICAL DATA**

Solar Cells	Monocrystalline
No. of cells	108 cells
Module Dimensions	1961×1134×30 mm
Weight	23.5 kg
Front Glass	1.6 mm, High Transmission, AR Coated Heat Strengthened Glass
Back Glass	1.6 mm, Heat Strengthened Glass
Frame	30 mm Anodized Aluminium Alloy, Black
J-Box	IP 68 rated, 3 bypass diodes
Cables	Photovoltaic Technology Cable 4.0 mm <sup>2</sup> Portrait: 280/350 mm* Landscape: 1300/1300 mm
Connector	TS4 / TS4 Plus / MC4 EVO2*

\*Special order only.

**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 to +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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