

# 515 W

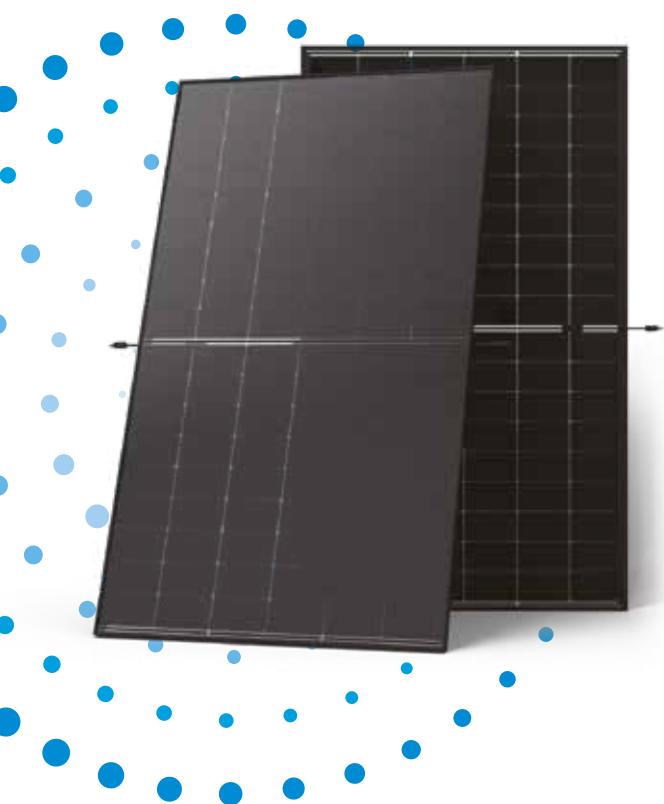
MAXIMUM POWER OUTPUT

# 0/+5 W

POSITIVE POWER TOLERANCE

# 23.2 %

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 515 W, 23.2 % 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

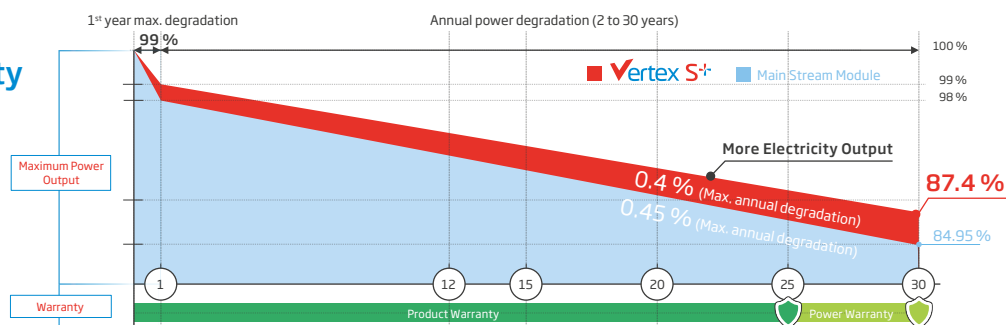
- Designed for compatibility with existing mainstream inverters, optimizers and mounting systems
- Easy to handle (length below 2 meters) and install on roofs with excellent size and light weight
- Flexible installation solutions for system deployment

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

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

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

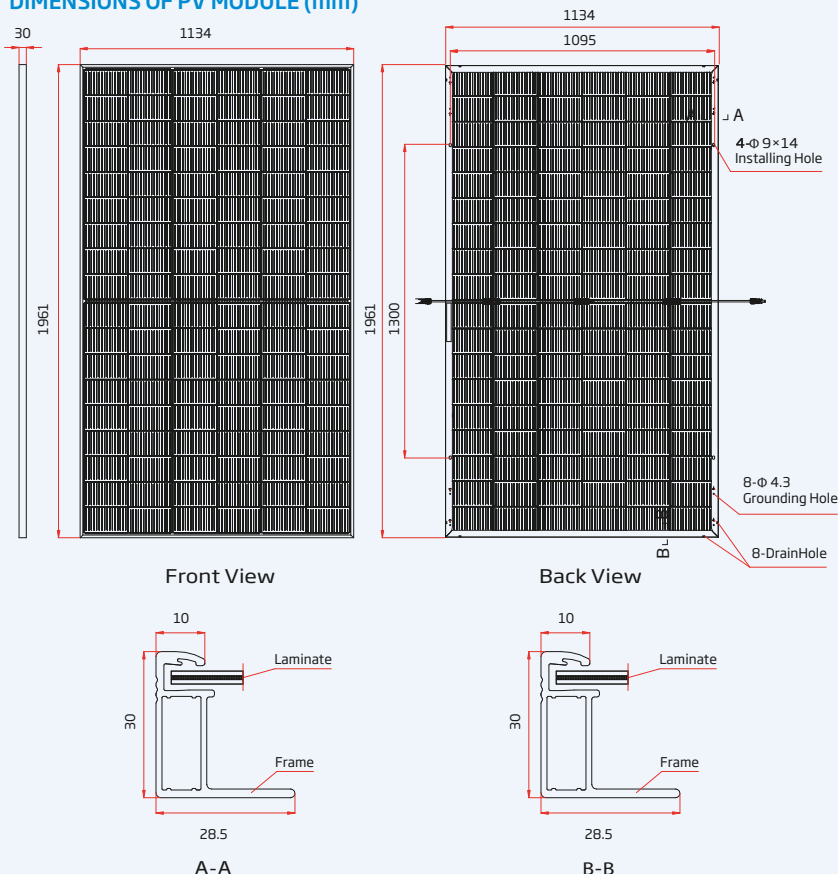
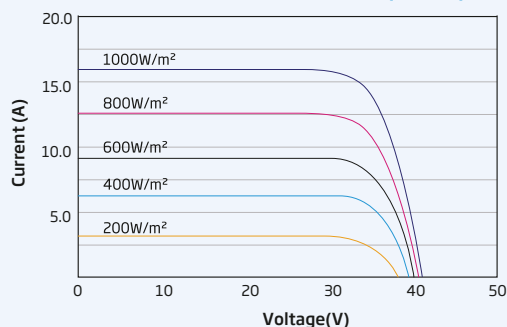
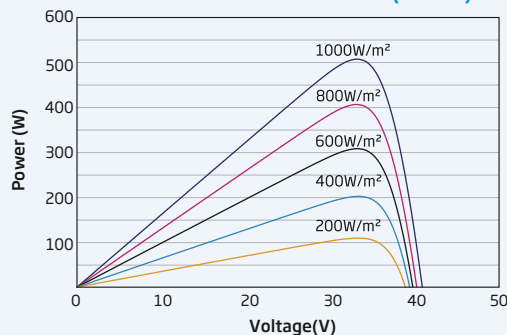
**25 Years**  
Product Workmanship Warranty



### 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 (505 W)**

**P-V CURVES OF PV MODULE (505 W)**

**MECHANICAL DATA**

|                   |                                           |
|-------------------|-------------------------------------------|
| Solar Cells       | N-type i-TOPCon monocrystalline           |
| No. of cells      | 108 cells                                 |
| Module Dimensions | 1961×1134×30 mm                           |
| Weight            | 23.5 kg                                   |
| Front Glass       | 1.6 mm, 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 mm²<br>Landscape: 1300/1300 mm<br>Portrait: 200/320 mm* |
| Connector | TS4 Plus / TS4 / MC4 EVO2*                                                                |

\*Special order only

**ELECTRICAL DATA (STC & NOCT & BNPI)**

TSM-490  
NEG18RC.27

TSM-495  
NEG18RC.27

TSM-500  
NEG18RC.27

TSM-505  
NEG18RC.27

TSM-510  
NEG18RC.27

TSM-515  
NEG18RC.27

| Testing Condition                    | STC    | NOCT  | BNPI  | STC   | NOCT  | BNPI  | STC   | NOCT  | BNPI  | STC   | NOCT  | BNPI  | STC   | NOCT  | BNPI  | STC   | NOCT  | BNPI  |
|--------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Peak Power Watts- $P_{MAX}$ (Wp)*    | 490    | 375   | 542   | 495   | 378   | 548   | 500   | 382   | 554   | 505   | 386   | 559   | 510   | 390   | 565   | 515   | 394   | 570   |
| Power Selection (W)**                | 0 ~ +5 |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Maximum Power Voltage- $V_{MPP}$ (V) | 32.9   | 31.0  | 32.9  | 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  |
| Maximum Power Current- $I_{MPP}$ (A) | 14.91  | 12.06 | 16.47 | 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 |
| Open Circuit Voltage- $V_{OC}$ (V)   | 39.6   | 37.6  | 39.6  | 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  |
| Short Circuit Current- $I_{SC}$ (A)  | 15.80  | 12.74 | 17.51 | 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 |
| Module Efficiency $\eta_m$ (%)       | 22.0   |       |       | 22.3  |       |       | 22.5  |       |       | 22.7  |       |       | 22.9  |       |       | 23.2  |       |       |

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 %  |
|-----------------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Total Equivalent power - $P_{MAX}$ (Wp) | 515   | 539   | 520   | 545   | 525   | 550   | 530   | 556   | 536   | 561   | 541   | 567   | 541   | 567   |
| Maximum Power Voltage- $V_{MPP}$ (V)    | 32.9  | 32.9  | 33.1  | 33.1  | 33.3  | 33.3  | 33.5  | 33.5  | 33.7  | 33.7  | 33.9  | 33.9  | 33.9  | 33.9  |
| Maximum Power Current- $I_{MPP}$ (A)    | 15.66 | 16.40 | 15.72 | 16.47 | 15.78 | 16.53 | 15.84 | 16.60 | 15.90 | 16.65 | 15.96 | 16.72 | 15.96 | 16.72 |
| Open Circuit Voltage- $V_{OC}$ (V)      | 39.6  | 39.6  | 39.8  | 39.8  | 40.1  | 40.1  | 40.3  | 40.3  | 40.6  | 40.6  | 40.9  | 40.9  | 40.9  | 40.9  |
| Short Circuit Current- $I_{SC}$ (A)     | 16.59 | 17.38 | 16.62 | 17.41 | 16.65 | 17.45 | 16.68 | 17.48 | 16.73 | 17.52 | 16.76 | 17.56 | 16.76 | 17.56 |

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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