



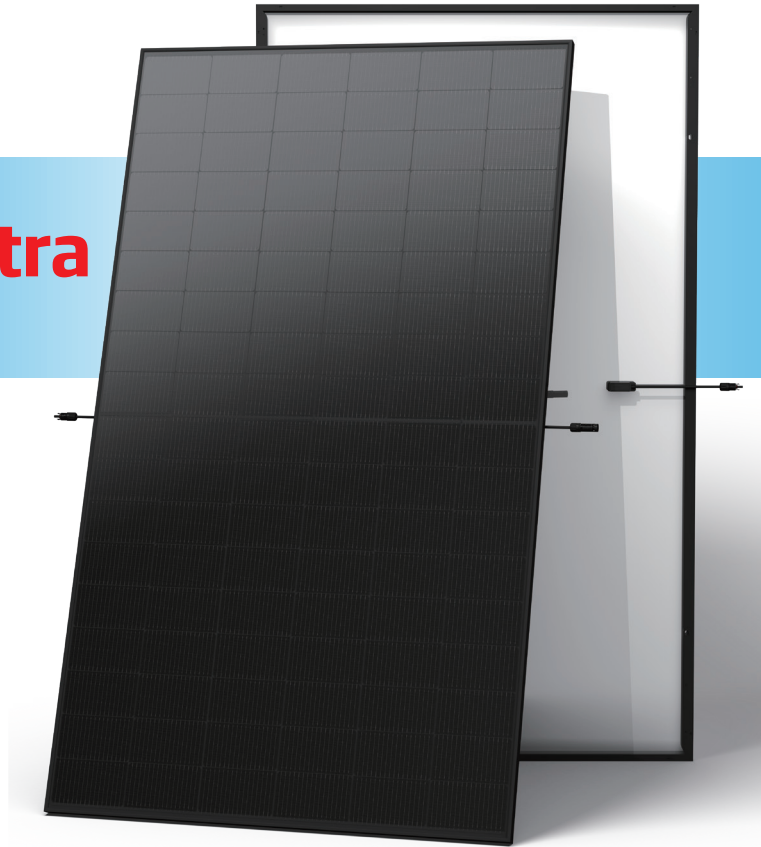
N-type i-TOPCon Ultra

MONOFACIAL DUAL GLASS MODULE

TSM-NEG18R.25 490-520W

520W / MAXIMUM POWER OUTPUT

23.4% / MAXIMUM EFFICIENCY



High customer value

- Lower LCOE (levelized cost of energy), reduced BOS (balance of system) cost, shorter payback time
- Designed for compatibility with existing mainstream system components
- High module power, high string power and low voltage design
- Easy to handle and install on roofs with excellent size and light weight



High power up to 520W

- Up to 23.4% module efficiency, on 210 innovation platform
- Patented i-TOPCon technology with continuous efficiency improvement, including contact resistance reduction, rear reflection enhancement and edge quality repairment



Dual-glass design, high reliability

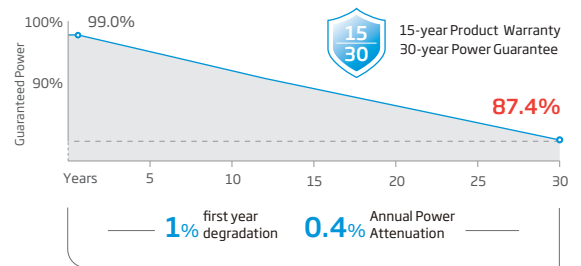
- Less prone to micro-cracks and scratches on the back during installation
- Applicable in harsh environments such as salt, ammonia, sand, high temperature and high humidity areas with excellent weather resistance, salt spray, sand dust, ammonia performance
- Mechanical performance up to 5400 Pa positive load and 2400 Pa negative load



High energy yield

- Excellent low irradiation performance, validated by 3rd party
- Lower temperature coefficient (-0.29%/°C) and operating temperature

Performance Warranty



* Please refer to product warranty for details

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



ELECTRICAL DATA (STC)

| | | | | | | | |
|-------------------------------------|--------|-------|-------|-------|-------|-------|-------|
| 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 1000W/m², Cell Temperature 25°C, Air Mass AM1.5. *Measuring tolerance: ±3%. **Power selection up to: +3%.

ELECTRICAL DATA (NOCT)

| | | | | | | | |
|-------------------------------------|-------|-------|-------|-------|-------|-------|-------|
| Peak Power Watts- $P_{MAX}(Wp)$ | 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 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

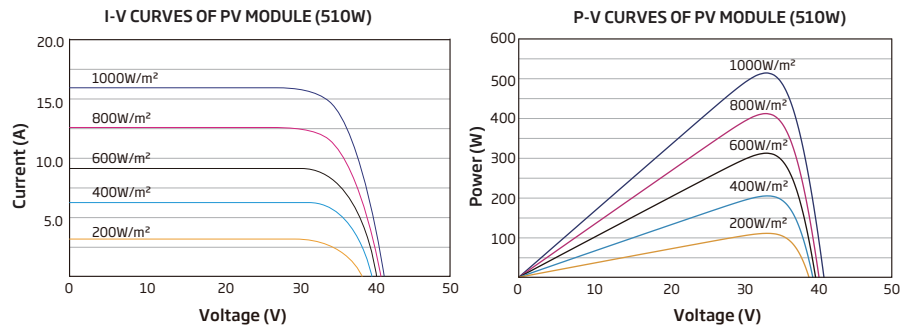
TEMPERATURE RATINGS

| | |
|---|-------------|
| 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 |

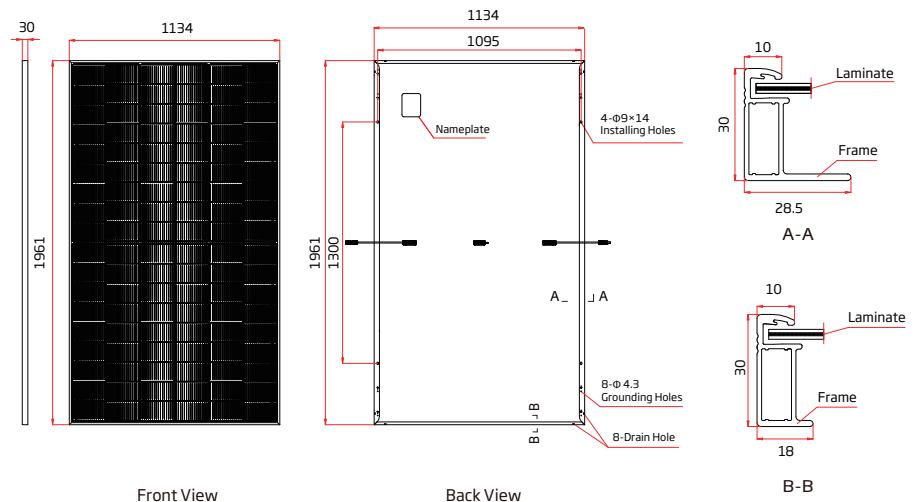
Due to different testing methods, the actual performances might differ from the declared specifications.

APPLICATION CONDITIONS

| | |
|------------------------|----------------|
| Operating Temperature | -40 ~ +70°C |
| Maximum System Voltage | 1500V DC (IEC) |
| Max Series Fuse Rating | 30A |

CURVES OF PV MODULE

MECHANICAL DATA

| | |
|-------------------|--|
| Solar Cells | N-type i-TOPCon Monocrystalline |
| No. of cells | 108 cells |
| Module Dimensions | 1961×1134×30 mm (77.20×44.65×1.18 inches) |
| Weight | 23.5 kg (51.8 lb) |
| Front Glass | 1.6mm (0.06inches), AR Coating Heat Strengthened Glass |
| Back Glass | 1.6mm (0.06inches), Heat Strengthened Glass |
| Frame | 30mm(1.18inches) Anodized Aluminium Alloy, Black |
| J-Box | IP 68 rated |
| Cables | Photovoltaic Technology Cable 4.0mm ² (0.006inches ²) Portrait: 200/320 mm(7.87/12.60 inches) Length can be customized |
| Connector | TS4 / TS4 Plus |
| Packaging | 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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