



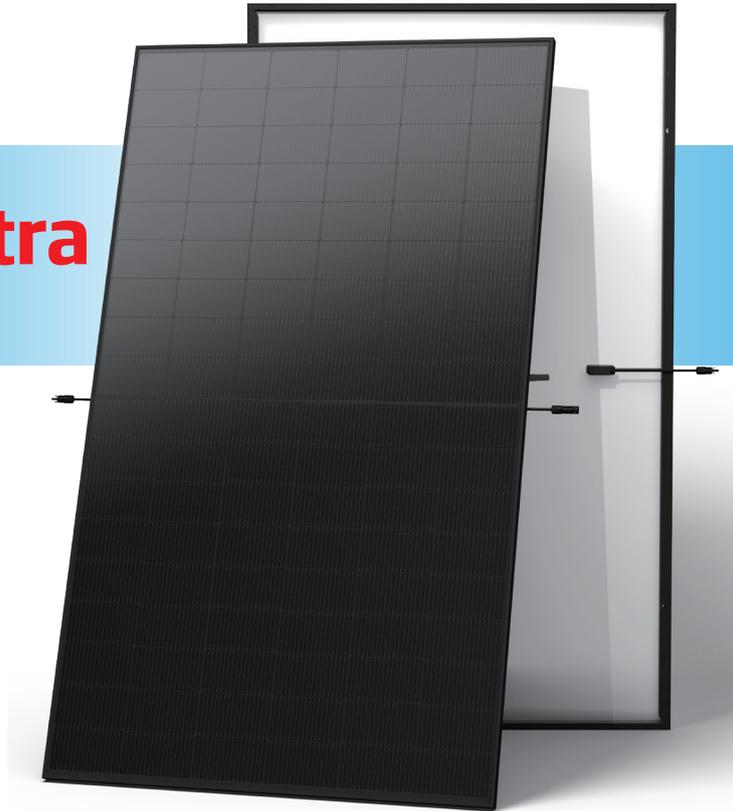
N-type i-TOPCon Ultra

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

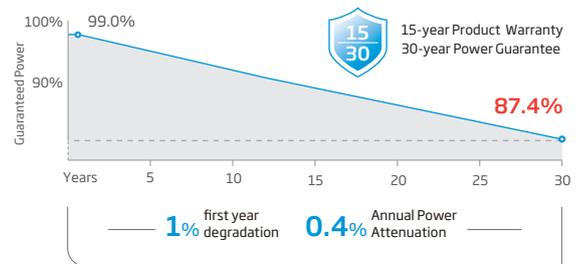
- Less prone to micro-cracks and scratches on the back during installation
- Applicable in harsh environments such as salt, ammonia, sand, high temperature and high humidity areas with excellent fire rating, weather resistance, salt spray, sand dust, ammonia performance
- Mechanical performance up to 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- $V_{MPP}(V)$	32.90	33.10	33.30	33.50	33.70	33.90	34.10
Maximum Power Current- $I_{MPP}(A)$	14.91	14.97	15.03	15.09	15.14	15.20	15.25
Open Circuit Voltage- $V_{oc}(V)$	39.60	39.80	40.10	40.30	40.60	40.90	41.20
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- $V_{MPP}(V)$	31.00	31.30	31.50	31.80	31.90	32.20	32.30
Maximum Power Current- $I_{MPP}(A)$	12.06	12.08	12.11	12.15	12.21	12.23	12.26
Open Circuit Voltage- $V_{oc}(V)$	37.60	37.70	38.00	38.30	38.50	38.80	39.00
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

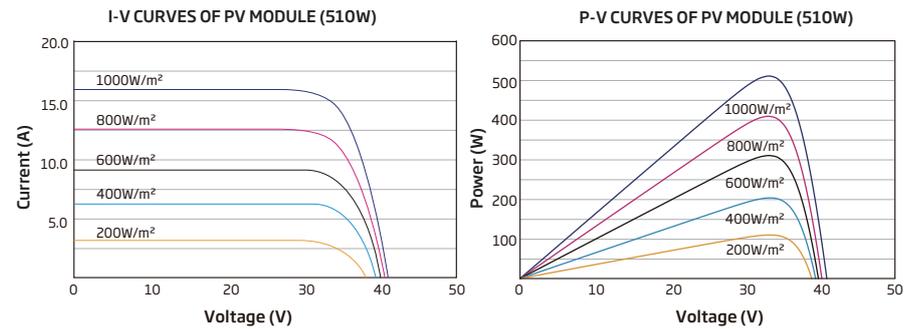
NOCT (Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of P_{MAX}	-0.29% /°C
Temperature Coefficient of V_{oc}	-0.24% /°C
Temperature Coefficient of I_{sc}	0.04% /°C

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

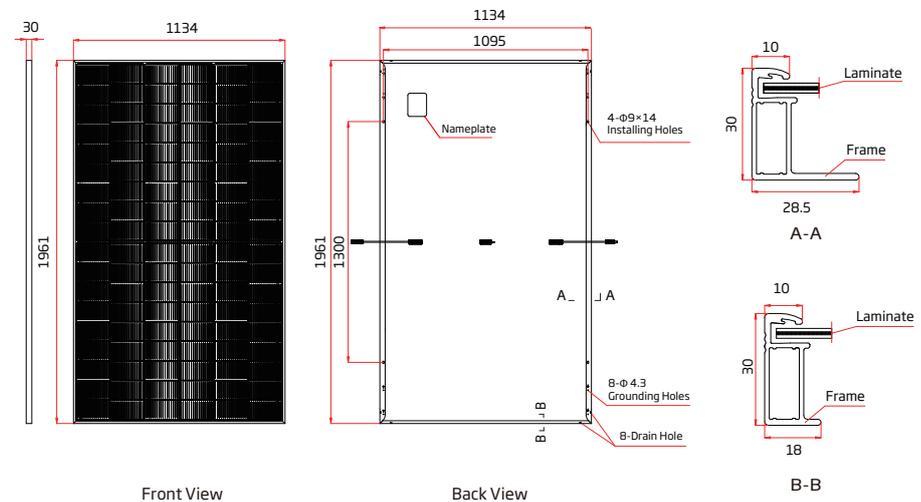
CURVES OF PV MODULE



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(7.87/12.60inches) Length can be customized
Connector	TS4 / TS4 Plus / MC4 EVO2*
Packaging	Modules per box: 36 pieces Modules per 40' container: 864 pieces

*The connector names listed are general names; specific types are subject to the certification documents.



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