

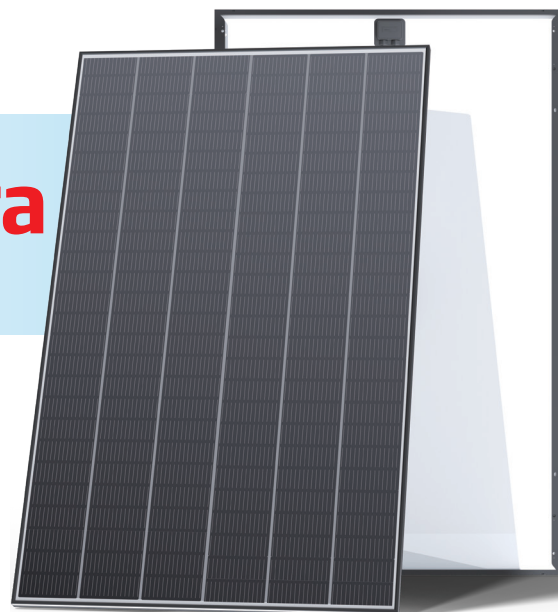
N-type i-TOPCon Ultra

DUAL GLASS MONOCRYSTALLINE MODULE

TSM-xxxNEG10R.28Z 495-515W

515W / MAXIMUM POWER OUTPUT

24.7% / MAXIMUM EFFICIENCY



Next Generation 510W Sweet Spot Power

- High power up to 510W, up to 24.4% module efficiency
- Compatible with mainstream inverters and diverse mounting systems
- Mechanical performance up to 5400 Pa static test load, Front and 4000 Pa static test load, Back



Design for Aussie Application

- 2.09m² perfect size design for Australia premium rooftops
- Cutting edge full-screen aesthetic design with ultra-high power density
- Fire Safety Class rating C, Safety Class II
- Up to 25 years product warranty and 30 years power warranty



TOPCon 3.0 Advanced Technology Platform

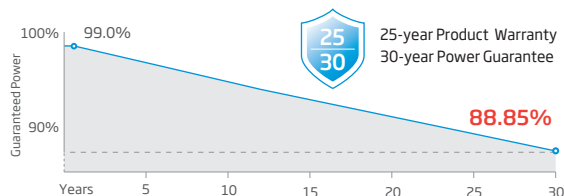
- Cutting edge module technology patent "zero-gap" stacked welding and "zero-string bar" technologies
- Single junction box design with high reliability and simplified cabling
- Patented i-TOPCon technology reach top ranking efficiency, including contact resistance reduction, rear reflection enhancement and edge quality repairment



High reliability and higher energy yield

- High reliability with light double glass, Less prone to micro-cracks and scratches on the back side
- Excellent low irradiation performance, validated by 3rd party
- Lower temperature efficient (-0.26%/°C) and lower working temperature

Performance Warranty



1% first year degradation 0.35% Annual Power Attenuation

(**Please refer to Limited Warranty Supplement that applies to the TSM-***NEG10R.28Z, Products supplied and installed within Australia & New Zealand.)

Comprehensive Products and System Certificates

IEC61215/IEC61730

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) TSM-xxxNEG10R.2BZ (xxx=495-515)

Peak Power Watts- $P_{MAX}(W_p)^*$	495	500	505	510	515
Power Selection(W)			0~+5		
Maximum Power Voltage- $V_{MPP}(V)$	33.05	33.20	33.35	33.50	33.65
Maximum Power Current- $I_{MPP}(A)$	14.99	15.07	15.15	15.23	15.31
Open Circuit Voltage- $V_{oc}(V)$	39.55	39.70	39.85	40.00	40.15
Short Circuit Current- $I_{sc}(A)$	15.93	15.94	15.96	15.97	15.98
Module Efficiency $\eta_m(\%)$	23.70	23.94	24.18	24.42	24.65

 STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5. *Measuring tolerance: $P_{max} \pm 3\%$, $V_{oc} \pm 3\%$ and $I_{sc} \pm 4\%$
ELECTRICAL DATA (NOCT)

Peak Power Watts- $P_{MAX}(W_p)$	378	382	385	389	393
Maximum Power Voltage- $V_{MPP}(V)$	31.30	31.50	31.70	31.90	32.10
Maximum Power Current- $I_{MPP}(A)$	12.09	12.13	12.16	12.22	12.25
Open Circuit Voltage- $V_{oc}(V)$	37.70	37.80	38.00	38.20	38.30
Short Circuit Current- $I_{sc}(A)$	12.80	12.81	12.83	12.84	12.85

 NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s.

TEMPERATURE RATINGS

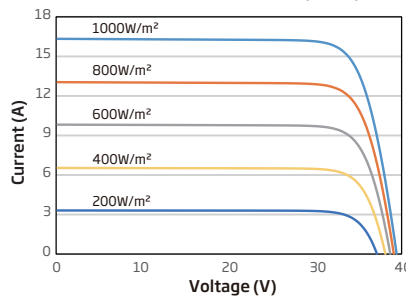
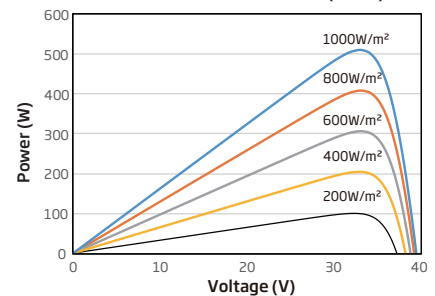
NOCT (Nominal Operating Cell Temperature)	43°C ($\pm 2^\circ\text{C}$)
Temperature Coefficient of P_{MAX}	-0.26% /°C
Temperature Coefficient of V_{oc}	-0.24% /°C
Temperature Coefficient of I_{sc}	0.04% /°C

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

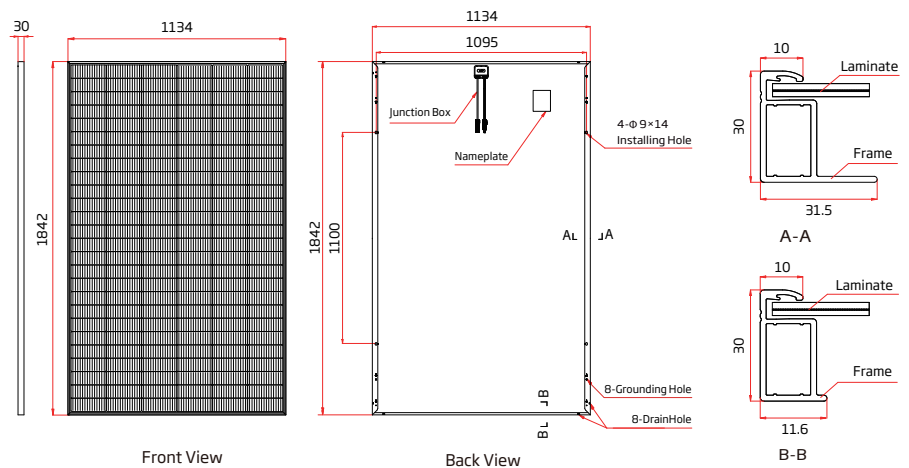
APPLICATION CONDITIONS

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

*PV module 98th percentile operating temperature: 70°C

CURVES OF PV MODULE (Cell Temperature (25±2)°C)
I-V CURVES OF PV MODULE (510W)

P-V CURVES OF PV MODULE (510W)

MECHANICAL DATA

Solar Cells	N-type i-TOPCon Monocrystalline
No. of cells	156 cells
Module Dimensions	1842×1134×30 mm (72.52×44.65×1.18 inches)
Weight	21.95 kg (48.39lb)
Front Glass	1.6 mm (0.06 inches) AR Coating Heat Strengthened Glass
Back Glass	1.6 mm (0.06 inches), Heat Strengthened Glass
Frame	30mm (1.18 inches) Anodized Aluminium Alloy, Black
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 6.0mm ² (0.009 inches ²) Length: 1200/1200 mm (47.2/47.2 inches)
Connector	Stäubli Electrical Connectors AG PV-KST4-EV02/xy_UR; PV-KBT4-EV02/xy_UR PV-KST4-EV02A/xy; PV-KBT4-EV02A/xy
Packaging	Modules per box: 37 pieces Modules per 40' container: 888 pieces



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