

Strong
Wind Protection

Severe
Hail Protection

Heavy
Snow Protection

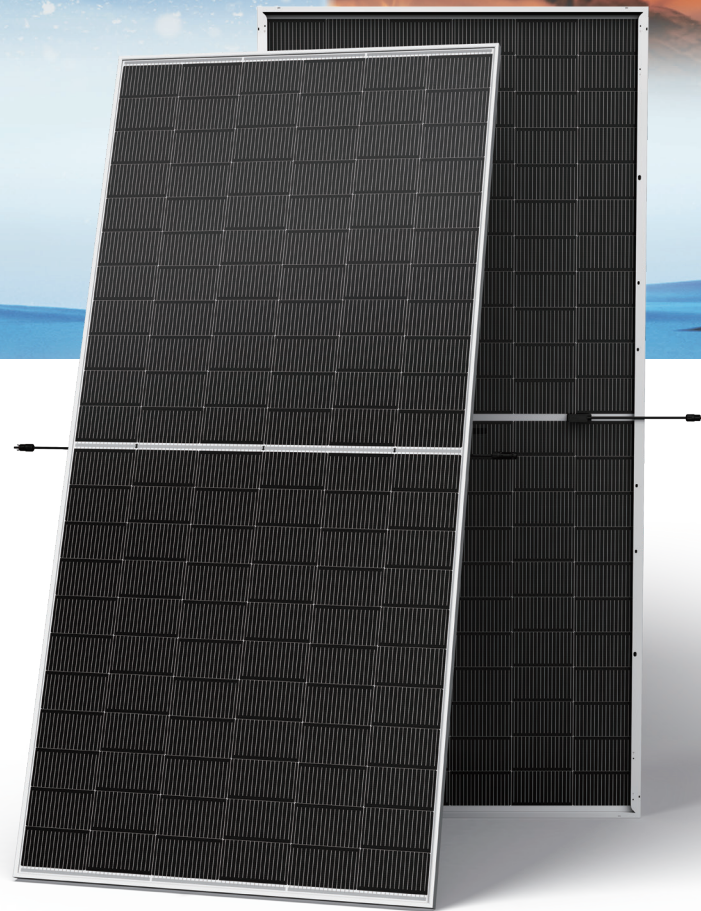
Superior
Fire Protection

Vertex N

— *i-TOPCon Ultra* —

Shield

TSM-XXXNED19RC.20
625-645W



Key Features



Pass IEC 55mm width hail certificate at a speed of 33.9m/s



Mechanical performance up to 6000 Pa static test load, Front and 4000 Pa static test load, Back



Fire Class A , Safety Class II



Better bankability, more profit

- Highly reliable products reduce insurance costs and reduce payout risk
- High power up to 645W and 23.9% module efficiency, on 210 innovation platform
- Low voltage design with higher string power, effectively reducing BOS and LCOE
- High Bifaciality & excellent low-irradiation performance, improve electricity generation per Watt



High reliability, resist for extremes

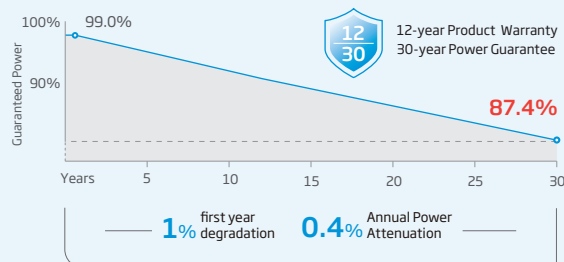
- Minimized micro-cracks with innovative non-destructive



Diversified scenarios adaption

- Support diversified installation methods, suitable for various application scenarios
- Typical module format design, better compatibility with trackers
- Excellent compatibility with existing mainstream inverters

Performance Warranty



*Please refer to product warranty for details
(Power degradation values above apply to frontside, refer to product warranty for power degradation for backside and other details)

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 & NOCT & BNPI) TSM-XXXNED19RC.20(XXX=625-645)

Testing Condition	STC	NOCT	BNPI	aBSI	STC	NOCT	BNPI	aBSI	STC	NOCT	BNPI	aBSI	STC	NOCT	BNPI	aBSI	STC	NOCT	BNPI	aBSI
Peak Power Watts- $P_{MAX}(W_p)^*$	625	477	692		630	481	698		635	487	704		640	489	709		645	492	715	
Power Selection (W)	0 ~ +5																			
Maximum Power Voltage- $V_{MPP}(V)$	40.46	38.10	40.46		40.68	38.30	40.68		40.84	38.60	40.84		41.06	38.70	41.06		41.22	38.80	41.22	
Maximum Power Current- $I_{MPP}(A)$	15.45	12.52	17.12		15.49	12.57	17.16		15.55	12.60	17.23		15.60	12.67	17.28		15.65	12.70	17.34	
Open Circuit Voltage- $V_{oc}(V)$	48.70	46.30	48.70		48.90	46.50	48.90		49.10	46.60	49.10		49.30	46.80	49.30		49.52	47.00	49.52	
Short Circuit Current- $I_{sc}(A)$	16.32	13.15	18.08	20.24	16.38	13.20	18.15	20.31	16.44	13.25	18.22	20.39	16.51	13.30	18.29	20.47	16.55	13.33	18.34	20.52
Module Efficiency η_m (%)	23.1				23.3				23.5				23.7				23.9			

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5. NOCT: Irradiance at 800W/m², Ambient Temperature 20°C, Wind Speed 1m/s. BNPI: Irradiance: front 1000W/m², rear 135W/m², Temperature 25°C, Air Mass AM1.5
 *Measuring tolerance: $P_{max} \pm 3\%$, $V_{oc} \pm 3\%$ and $I_{sc} \pm 5\%$

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%
Peak Power Watts- $P_{MAX}(W_p)$	656	688	662	693	667	699	672	704	677	710
Maximum Power Voltage- $V_{MPP}(V)$	40.46	40.46	40.68	40.68	40.84	40.84	41.06	41.06	41.22	41.22
Maximum Power Current- $I_{MPP}(A)$	16.22	17.00	16.26	17.04	16.33	17.11	16.38	17.16	16.43	17.22
Open Circuit Voltage- $V_{oc}(V)$	48.70	48.70	48.90	48.90	49.10	49.10	49.30	49.30	49.52	49.52
Short Circuit Current- $I_{sc}(A)$	17.14	17.95	17.20	18.02	17.26	18.08	17.34	18.16	17.38	18.21

ϕP_{max} : 80% \pm 5% ; ϕV_{oc} :100% \pm 3%; ϕI_{sc} :80% \pm 5%

TEMPERATURE RATINGS

NOCT (Nominal Operating Cell Temperature)	43°C (\pm 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

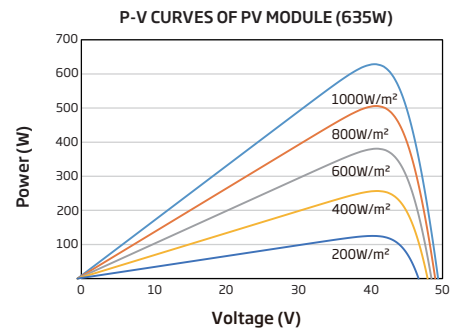
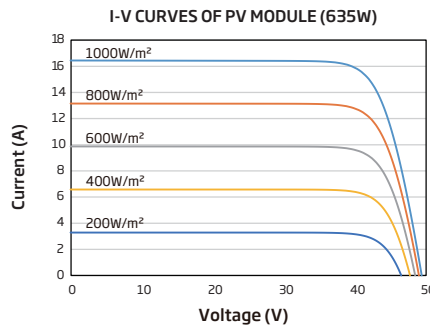
Due to different testing methods, the actual performances might differ from the declared specifications.

APPLICATION CONDITIONS

Operating Temperature*	-40~+70°C
Maximum System Voltage	1500V DC (IEC) 1500V DC (UL)
Max Series Fuse Rating	35A

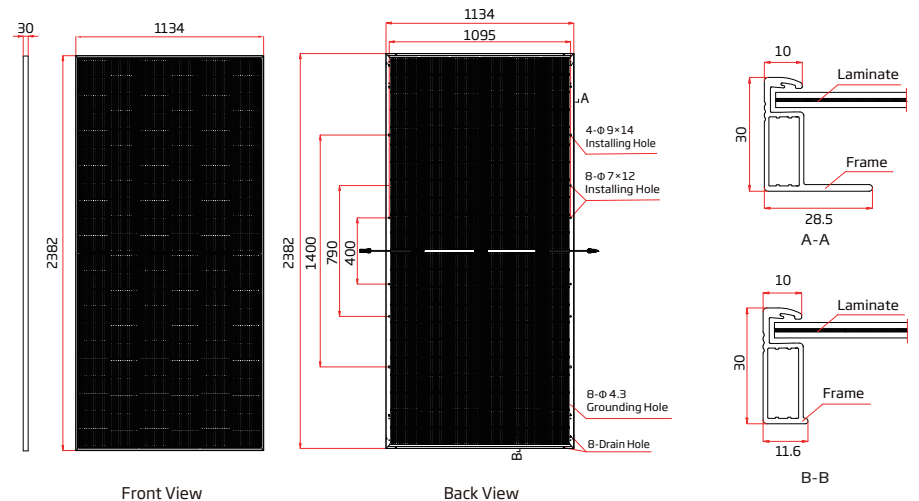
*PV module 98th percentile operating temperature : 70°C

CURVES OF PV MODULE (Cell Temperature (25 \pm 2)°C)



MECHANICAL DATA

Solar Cells	N-type i-TOPCon Monocrystalline
No. of cells	132 cells
Module Dimensions	2382 \times 1134 \times 30 mm (93.78 \times 44.65 \times 1.18 inches)
Weight	39.7 kg (87.5 lb)
Front Glass	AR Coating Heat Strengthened Glass
Back Glass	Heat Strengthened Glass
Frame	30mm(1.18 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm ² (0.006 inches ²) Portrait: 200/320 mm(7.87/12.60 inches) Length can be customized
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: 36 pieces Modules per 40' container: 612 pieces



CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT.
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 Version number: TSM_AUS_EN_2025_A
 Country of Origin: China