



# N-type i-TOPCon Ultra

BACKSHEET MONOCRYSTALLINE MODULE

TSM-xxxNE19R 625-650W

**650<sub>W</sub>** / MAXIMUM POWER OUTPUT

**24.1%** / MAXIMUM EFFICIENCY



## High customer value

- Standardized module size with flagship module power, 30W higher compared with conventional technology
- Low Voltage design with higher string power, effectively reducing BOS (Balance of System) and LCOE (Levelized Cost of Energy) by 1%~5%
- Suitable for all scenario, especially C&I, residential, and ground applications
- Higher container space utilization effectively reduces the freight cost
- Excellent compatibility with existing mainstream system components



## High power up to 650W

- Up to 24.1% 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



## High reliability

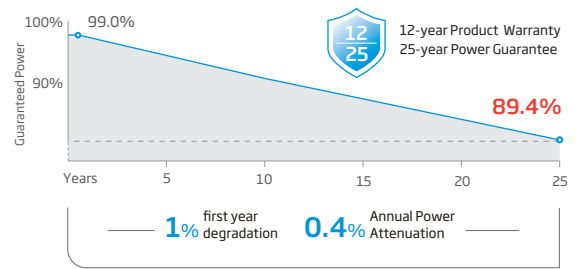
- Minimized micro-cracks with innovative non-destructive cutting technology and high-density packaging
- Reduced risks of hot-spot with half-cut technology
- Fire Class rating C, Safety Class II



## High energy yield

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

## Performance Warranty



\* Please refer to product warranty for 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) TSM-xxxNE19R(XXX=625-650)**

Peak Power Watts- $P_{MAX}(W_p)^*$	625	630	635	640	645	650
Power Selection (W)**	0 ~ +5					
Maximum Power Voltage- $V_{MPP}(V)$	41.60	42.00	42.30	42.60	42.90	43.20
Maximum Power Current- $I_{MPP}(A)$	15.00	15.01	15.02	15.03	15.04	15.05
Open Circuit Voltage- $V_{oc}(V)$	49.80	50.30	50.50	50.90	51.20	51.50
Short Circuit Current- $I_{sc}(A)$	15.93	15.94	15.95	15.97	15.99	16.01
Module Efficiency $\eta_m$ (%)	23.1	23.3	23.5	23.7	23.9	24.1

STC: Irradiance 1000W/m<sup>2</sup>, 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- $P_{MAX}(W_p)$	477	482	487	490	494	498
Maximum Power Voltage- $V_{MPP}(V)$	39.00	39.40	39.80	40.00	40.30	40.60
Maximum Power Current- $I_{MPP}(A)$	12.21	12.23	12.24	12.25	12.26	12.27
Open Circuit Voltage- $V_{oc}(V)$	47.30	47.60	47.90	48.30	48.60	48.80
Short Circuit Current- $I_{sc}(A)$	12.84	12.85	12.86	12.87	12.89	12.91

NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s.

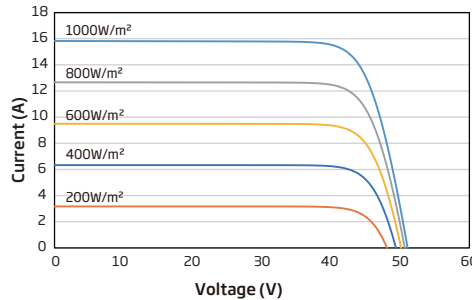
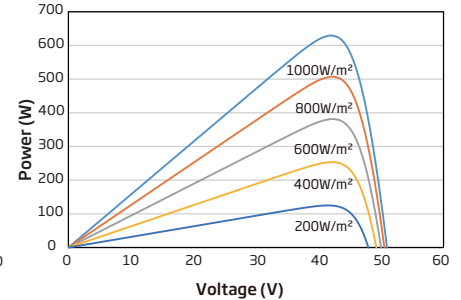
**TEMPERATURE RATINGS**

NOCT (Nominal Operating Cell Temperature)	43°C ( $\pm 2^\circ\text{C}$ )
Temperature Coefficient of $P_{MAX}$	-0.29% /°C
Temperature Coefficient of $V_{oc}$	-0.24% /°C
Temperature Coefficient of $I_{sc}$	0.04% /°C

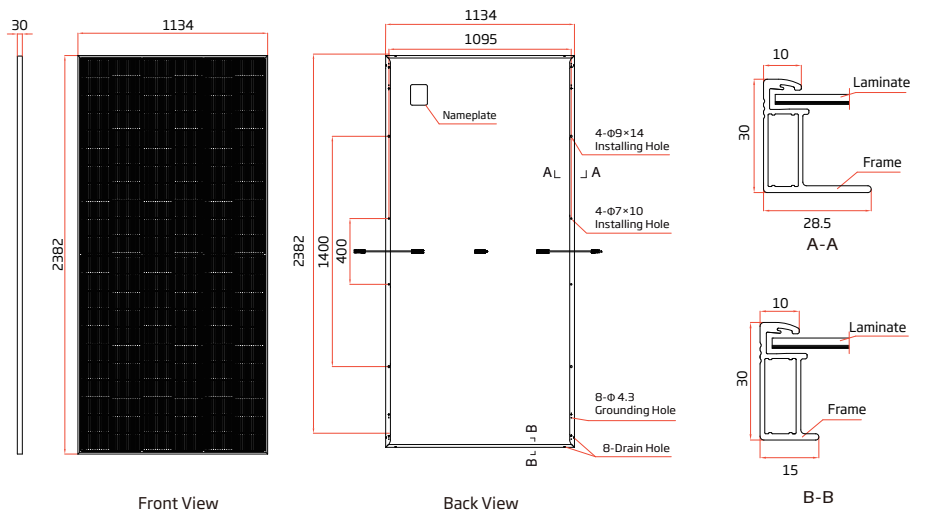
Due to different testing methods, the actual performances might differ from the declared specifications.

**APPLICATION CONDITIONS**

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

**CURVES OF PV MODULE (Cell Temperature (25±2)°C)**
**I-V CURVES OF PV MODULE (630W)**

**P-V CURVES OF PV MODULE (630W)**

**MECHANICAL DATA**

Solar Cells	N-type i-TOPCon Monocrystalline
No. of cells	132 cells
Module Dimensions	2382×1134×30 mm (93.78×44.65×1.18 inches)
Weight	27.9 kg (61.51 lb)
Front Glass	3.2mm (0.13inches), AR Coating Tempered Glass
Backsheet	White
Frame	30mm (1.18 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	Photovoltaic Technology Cable 4.0mm <sup>2</sup> (0.006 inches <sup>2</sup> ) 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: 720 pieces



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