



# TUNGHSU

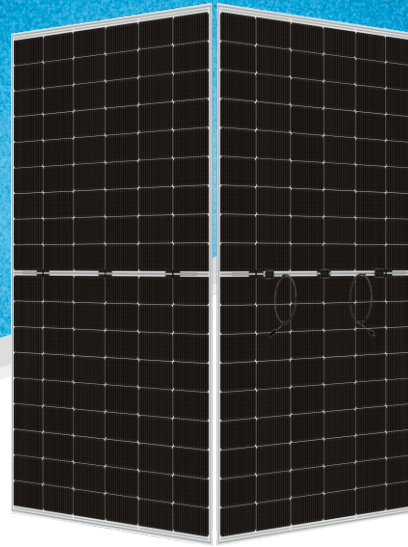
## Supreme (N-Type)

420W/425W/430W/435W/440W

108 CELLS BIFACIALSMBB HALF-CELL MONO

PV MODULE N-TYPE M10(182mm)

BIFACIAL DOUBLE GLASS



### 435W

Maximum Power Output

### 22.27%

Maximum Module Efficiency

### 0~+5W

Power Output Tolerance

# 415-435W

### Tungshu components with high efficiency and high reliability

- \* Advanced production equipment, highly automated process control, world-class production technology
- \* The company has a product research and development laboratory that meets the new ISO/IEC international standards
- \* Excellent weak light performance, resistant to salt spray and ammonia corrosion.
- Passing the certification test of the PV standards.
- \* Certified by international quality management and environmental management system
- \* Application grade:A, Safe grade: II, Fireproofing grade:C

### Comprehensive Products And System Certificates

IEC61215/IEC61730/UL1703/IEC61701/IEC62716  
 ISO 9001: Quality Management System  
 ISO 14001: Environmental Management System  
 ISO 45001: Occupation Health and Safety Management System  
 GB/T 23001-2017: Management system with Integration of Information Technology and Industrialization



### 10-30% Additional Power Generation

30 years lifespan brings 10-30% additional power generation comparing with conventional P-type module

### ZERO LID (Light Induced Degradation)

N-type solar cell has no LID naturally which can increase power generation

### Higher Reliability

No polysilicon wrap around, Full electrical isolation. Zero leakage current: Much Safer for roof

### Better Weak Illumination Response

Higher power output even under low-light environments like on cloudy or foggy days

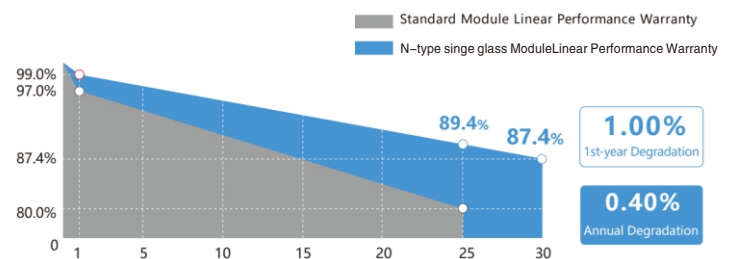
### Better Temperature Coefficient

Higher power generation under working conditions, thanks to passivating contact cell technology

### wider Applicability

More application scenes like BIPV, vertical installation snow field, high-humid, windy and dusty area

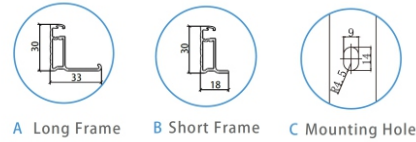
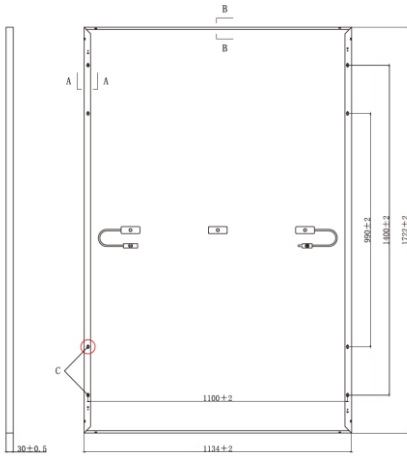
### Linear Performance Warranty



15 Years Product Material & Workmanship

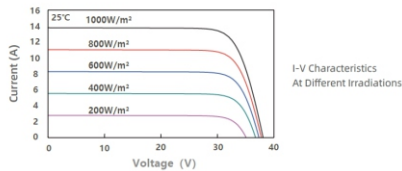
30 Years Linear Performance Warranty

Engineering Drawing (unit: mm)

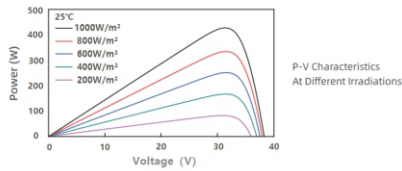


Front View

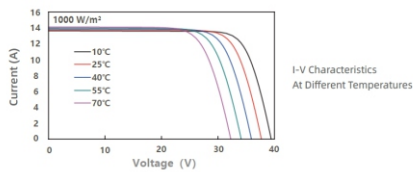
Characteristic Curves | HT108N-420



I-V Characteristics At Different Irradiances



P-V Characteristics At Different Irradiances



I-V Characteristics At Different Temperatures

Electrical Properties | STC\*

Peak Power ( Pmax ) (W)	415	420	425	430	435
MPP Voltage ( Vmp ) (V)	31.7	31.9	32.1	32.3	32.5
MPP Current ( Imp ) (A)	13.10	13.17	13.24	13.32	13.39
Open Circuit Voltage ( Voc ) (V)	37.7	37.9	38.1	38.3	38.4
Short Circuit Current ( Isc ) (A)	13.91	13.98	14.05	14.12	14.18
Module Efficiency ( % )	21.25	21.51	21.76	22.02	22.27

\*STC: Irradiance 1000 W/m<sup>2</sup>, Cell Temperature 25° C, AM1.5  
The data above is for reference only and the actual data is in accordance with the practical testing  
Power Measurement Tolerance ± 3%

Electrical Properties | NOCT\*

Peak Power (Pmax) (W)	315	318	322	326	330
MPP Voltage (Vmp)(V)	29.8	30.0	30.2	30.3	30.5
MPP Current (Imp) (A)	10.56	10.62	10.67	10.74	10.82
Open Circuit Voltage ( Voc ) (V)	36.0	36.2	36.4	36.6	36.8
Short Circuit Current ( Isc ) (A)	11.22	11.27	11.33	11.38	11.44

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

Mechanical Properties

Cell Size	182.00mm*91.00mm
Number of Cells	108pcs(12*9)
Module Dimension	1722mm*1134mm*30mm
Weight	24.5kg
Front /Rear Glass	2.0mm/2.0mm
Frame	Anodized Aluminium Alloy
Junction Box	Ip68 (3 diodes)
Length of Cable	4.0mm <sup>2</sup> , +300mm/-300mm (Cable length can be customized )

\*Heat strengthened glass

Temperature Coefficient

Temperature Coefficient of Pmax*	-0.300%/°C
Temperature Coefficient of Voc	-0.250%/°C
Temperature Coefficient of Isc	+0.045%/°C
Nominal Operating Cell Temperature (NOCT)	42±2°C

\*Temperature Coefficient of Pmax+0.03%/°C

Operating Properties

Operating Temperature(°C)	-40~+85°C
Maximum System Voltage (V)	1500V DC (IEC)
Maximum Series Fuse Rating (A)	30
Power Tolerance	0~+5W
Bifaciality*	80%

Bifaciality=Pmaxrear (STC) /Pmaxfront (STC) . Bifaciality tolerance:+5%

Packaging Configuration

Packing Type	20'GP	40'GP	40'HQ
Piece/Pallet		36	
Pallet/Container	6	13	26
Piece/Container	216	468	936

WARRANTY

15 year Product Workmanship Warranty
30 year Linear Power Warranty

Note: Read the safety and installation instructions before using the product.  
Affirm: With technological progress and product updates, the technical parameters of Anhui RiChao's later component products may deviate from the technical parameters contained in this specification. Anhui RiChao has the right to adjust various technical parameters at any time without notifying the customer. The final interpretation right of this technical specification belongs to Anhui RiChao New Energy Technology Co., Ltd.

