



TUNGHSU

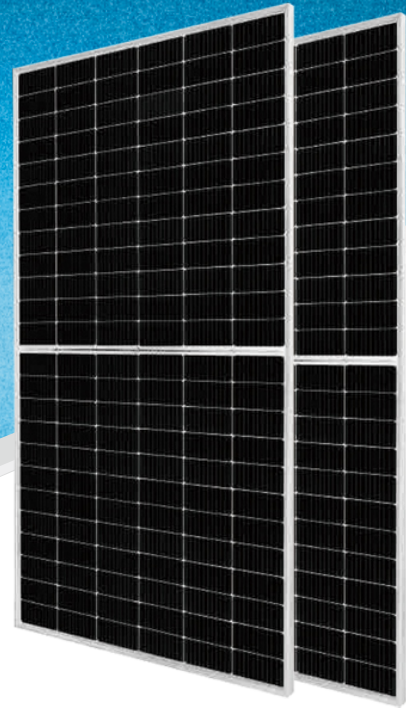
Spirit series

M10 (182mm)

530W/535W/540W/545W/550W

144 CELLS MBB BIFACIAL MONO PV MODULE

BIFACIAL DOUBLE GLASS



530-555W

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



High power output

Double-sided power generation, higher power generation of the module
 Up to 555w front power and 21.5% module efficiency with half-cut and MBB



Higher power generation

Double-sided power generation, according to different installation environments, the power generation on the back can be increased by up to 25%
 Half-cell technology brings stronger anti-shadow occlusion ability
 Effectively reduce system BOS cost



High-efficiency PERC+ cell technology

Double-sided PERC cell, half-cut technology
 Higher module power and efficiency, lower power attenuation

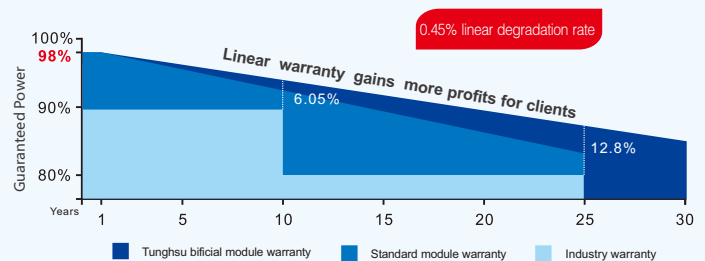


Certified to withstand the most challenging environmental conditions

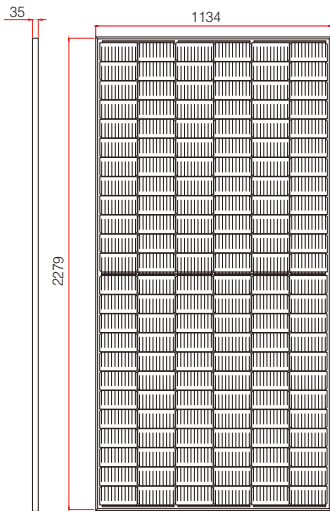
2400 Pa wind load
 5400 Pa snow load

Industry-leading linear warranty

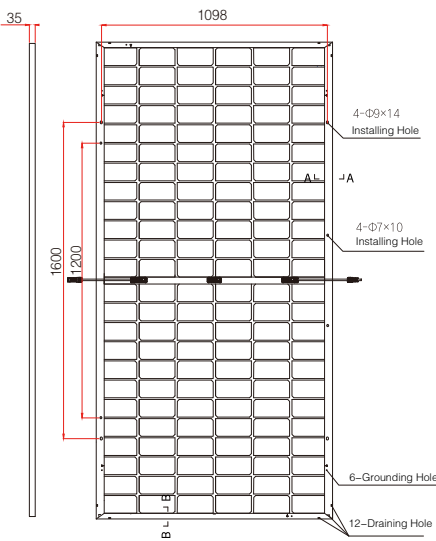
+15 Year Product Warranty +30 Year Linear Power Warranty



DIMENSIONS OF PV MODULE(mm)

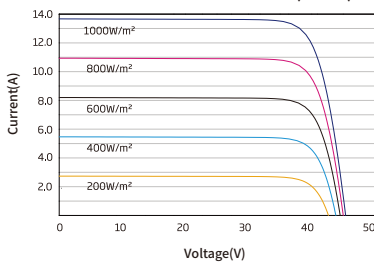


Front View

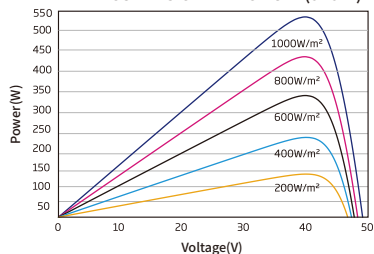


Back View

I-V CURVES OF PV MODULE(545W)



P-V CURVES OF PV MODULE(545W)



ELECTRICAL DATA (STC)

Peak Power Watts- P_{MAX} (Wp)	530	535	540	545	550	555
Power Output Tolerance- P_{MAX} (W)	0~ +5					
Maximum Power Voltage- V_{MPP} (V)	41.31	41.47	41.64	41.80	41.96	42.12
Maximum Power Current- I_{MPP} (A)	12.83	12.90	12.97	13.04	13.11	13.18
Open Circuit Voltage- V_{OC} (V)	49.30	49.45	49.60	49.75	49.90	50.05
Short Circuit Current- I_{SC} (A)	13.72	13.79	13.86	13.93	14.00	14.07
Module Efficiency η_m (%)	20.5	20.7	20.9	21.1	21.3	21.5

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass AM1.5.

ELECTRICAL PARAMETERS AND DIFFERENT POWER GAIN BACK (Take 10% irradiation ratio as an example)

Maximum Power- P_{MAX} (Wp)	567	572	578	583	589	594
Maximum Power Voltage- V_{MPP} (V)	41.77	41.99	42.24	42.43	42.67	42.92
Maximum Power Current- I_{MPP} (A)	13.58	13.63	13.69	13.74	13.79	13.84
Open Circuit Voltage- V_{OC} (V)	49.67	49.80	49.93	50.03	50.21	50.34
Short Circuit Current- I_{SC} (A)	13.49	14.45	14.50	14.56	14.63	14.69

Back gain: Under standard test conditions, the additional gain from the back and the front power depends on the installation and ground albedo parameters.

ELECTRICAL DATA (NOCT)

Maximum Power- P_{MAX} (Wp)	401	405	408	412	416	420
Maximum Power Voltage- V_{MPP} (V)	38.57	38.78	38.99	39.20	39.43	39.66
Maximum Power Current- I_{MPP} (A)	10.39	10.43	10.47	10.51	10.55	10.59
Open Circuit Voltage- V_{OC} (V)	46.18	46.31	46.43	46.55	46.68	46.81
Short Circuit Current- I_{SC} (A)	11.01	11.05	11.09	11.13	11.17	11.21

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

MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	144cell(6x24)
Module Dimensions	2279x1134x35mm(89.72x44.65x1.38 inches)
Weight	31.5kg(69.45lb)
Front Glass	2.0mm (0.08inches), High Transmission, Tempered Coated Glass
Encapsulant Material	POE/EVA
Rear Glass	2.0mm(0.08inches) semi-tempered glass (white grid)
Frame	35mm (1.38 inches) Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	4.0mm ² , 350mm photovoltaic special cable, or customized
Connector	MC4, QC4

TEMPERATURE RATING

NOCT(Nominal Operating Cell Temperature)	41°C (± 2°C)
Temperature Coefficient of P_{MAX}	- 0.350%/°C
Temperature Coefficient of V_{OC}	- 0.27%/°C
Temperature Coefficient of I_{SC}	0.045%/°C

WARRANTY

15 year Product Workmanship Warranty
30 year Linear Power Warranty

LIMIT PARAMETERS

Operational Temperature	-40~+85°C
Maximum System Voltage	1500V DC (IEC)
Max Series Fuse Rating	25A

(DO NOT connect Fuse in Combiner Box with two or more strings in parallel connection)

PACKAGING CONFIGURATION

Modules per box: 31 pieces
Modules per 40' container:620 pieces

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.



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