



TUNGHSU

Spirit series

M10(182mm)

395W/400W/405W/410W/415W

108 CELLS MBB HALF-CELL MONO PV MODULE
SINGLE GLASS BLACK FRAME



395-415W

► Tunghsu 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



Non-destructive cutting

Higher cell bending strength and module mechanical performance



Higher customer value

Up to 25% extra power gain, lower BOS cost and LCOE



High-efficiency PERC+ Cell 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

► 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

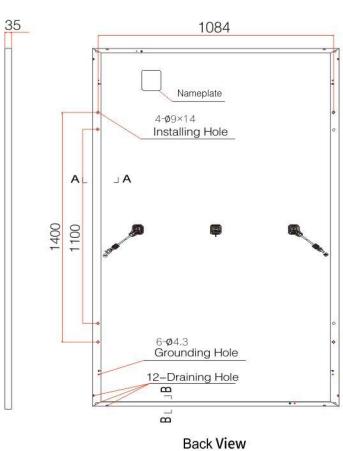
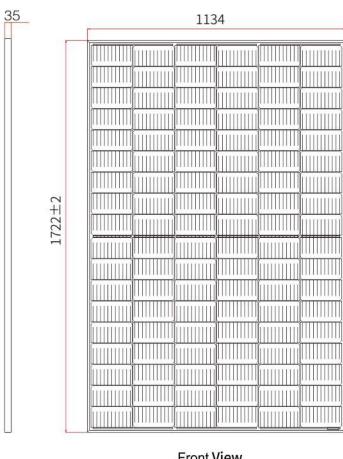


Industry-leading linear warranty

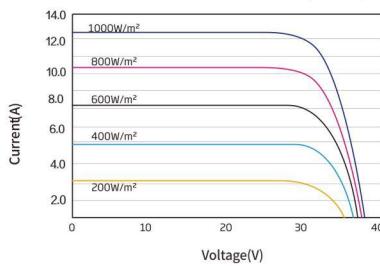
*15 Years Product Warranty *25 Years Linear Power Warranty



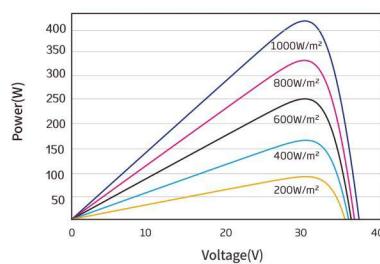
DIMENSIONS OF PV MODULE(mm)



I-V CURVES OF PV MODULE(405W)



P-V CURVES OF PV MODULE(405W)



ELECTRICAL DATA (STC)

Peak Power Watts-P _{MAX} (Wp)	395	400	405	410	415
Power Output Tolerance-P _{MAX} (W)	0~ + 5				
Maximum Power Voltage-V _{MPP} (V)	30.84	31.01	31.21	31.45	31.61
Maximum Power Current-I _{MPP} (A)	12.81	12.90	12.98	13.04	13.13
Open Circuit Voltage-V _{OC} (V)	36.98	37.07	37.23	37.32	37.45
Short Circuit Current-I _{SC} (A)	13.70	13.79	13.87	13.95	14.02
Module Efficiency η _m (%)	20.2	20.5	20.7	21.0	21.3

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

ELECTRICAL DATA (NOCT)

Maximum Power-P _{MAX} (Wp)	298	302	306	310	314
Maximum Power Voltage-V _{MPP} (V)	29.08	29.26	29.47	29.72	29.89
Maximum Power Current-I _{MPP} (A)	10.25	10.32	10.38	10.43	10.50
Open Circuit Voltage-V _{OC} (V)	34.75	34.88	35.12	35.23	35.37
Short Circuit Current-I _{SC} (A)	10.96	11.03	11.10	11.16	11.22

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

MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	108 cell (6x18)
Module Dimensions	1722x1134x30 mm
Weight	22.0kg
Front Glass	3.2mm (0.13 inches), High Transmission, Strengthened Coated Glass
Encapsulant Material	POE/POE
Backsheet	White
Frame	30 mm Anodized Aluminium Alloy
J-Box	IP 68 rated
Cables	4.0mm ² , 1100mm photovoltaic special cable, or customized
Connector	MC4、QC4

TEMPERATURE RATING

NOCT(Nominal Operating Cell Temperature)	45°C (± 2°C)
Temperature Coefficient of P _{MAX}	- 0.350%/°C
Temperature Coefficient of V _{OC}	- 0.275%/°C
Temperature Coefficient of I _{SC}	0.045%/°C

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)

WARRANTY

15 year Product Workmanship Warranty
25 year Linear Power Warranty

PACKAGING CONFIGURATION

Modules per box: 36pieces
Modules per 40' container:936 pieces





TUNGHSU

Spirit series

M10 (182mm)

525W/530W/535W/540W/545W/550W

144 CELLS MBB HALF-CELL MONO PV MODULE

SINGLE GLASS REGULAR TYPE



525-550W

► Tunghsu 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



Non-destructive cutting



Higher customer value



High-efficiency PERC+ cell technology



Certified to withstand the most challenging environmental conditions

► 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



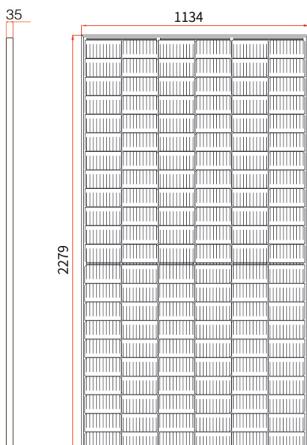
Industry-leading linear warranty

*15 Year Product Warranty *25 Year Linear Power Warranty

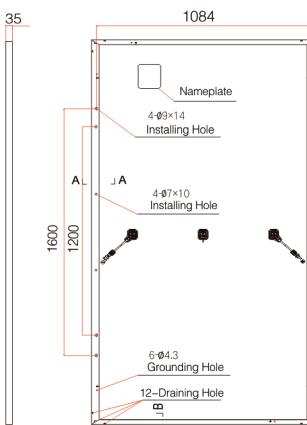
0.55% linear degradation rate



DIMENSIONS OF PV MODULE(mm)

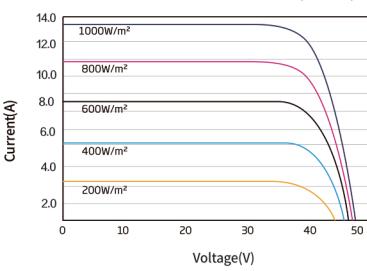


Front View

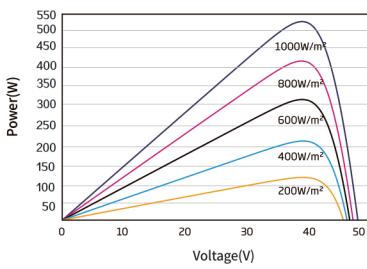


Back View

I-V CURVES OF PV MODULE(540W)



P-V CURVES OF PV MODULE(540W)



ELECTRICAL DATA (STC)

Peak Power Watts-P _{MAX} (Wp)	525	530	535	540	545	550
Power Output Tolerance-P _{MAX} (W)	0~+5					
Maximum Power Voltage-V _{MPP} (V)	41.15	41.31	41.47	41.64	41.80	41.96
Maximum Power Current-I _{MPP} (A)	12.76	12.83	12.90	12.97	13.04	13.11
Open Circuit Voltage-V _{OC} (V)	49.15	49.30	49.45	49.60	49.75	49.90
Short Circuit Current-I _{SC} (A)	13.65	13.72	13.79	13.86	13.93	14.00
Module Efficiency η ^m (%)	20.3	20.5	20.7	20.9	21.1	21.3

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

ELECTRICAL DATA (NOCT)

Maximum Power-P _{MAX} (Wp)	397	401	405	408	412	416
Maximum Power Voltage-V _{MPP} (V)	38.36	38.57	38.78	38.99	39.20	39.43
Maximum Power Current-I _{MPP} (A)	10.35	10.39	10.43	10.47	10.51	10.55
Open Circuit Voltage-V _{OC} (V)	46.05	46.18	46.31	46.43	46.55	46.68
Short Circuit Current-I _{SC} (A)	10.97	11.01	11.05	11.09	11.13	11.17

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

MECHANICAL DATA

Solar Cells	Monocrystalline
Cell Orientation	144 cell (6x24)
Module Dimensions	2279x1134x35mm(89.72x44.65x1.38 inches)
Weight	28.5kg(62.83 lb)
Front Glass	3.2mm (0.13 inches), High Transmission, Strengthened Coated Glass
Encapsulant Material	EVA/POE
Backsheet	White
Frame	35 mm (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)	45°C (± 2°C)
Temperature Coefficient of P _{MAX}	- 0.350%/°C
Temperature Coefficient of V _{OC}	- 0.275%/°C
Temperature Coefficient of I _{SC}	0.045%/°C

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)

WARRANTY

15 year Product Workmanship Warranty
25 year Linear Power Warranty

PACKAGING CONFIGURATION

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

