



MBB Half-cell Monofacial Black-frame Module (54)

TW400~420MAP

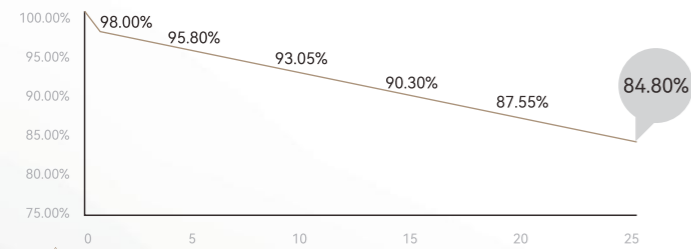
M10-108-H-S (Black Frame)

PRODUCT FEATURES



POWER WARRANTY

1st year <2%, 0.55% power degradation per year from 2 to 25 years



12 12-year warranty for materials

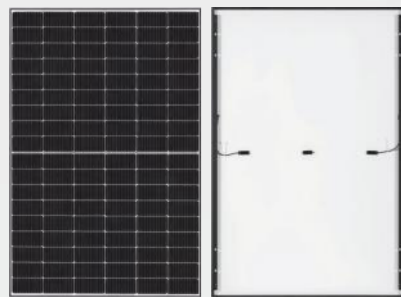
25 25-year warranty for linear power output

MANAGEMENT SYSTEM AND PRODUCT CERTIFICATION

ISO45001: 2018/Occupational Health and Safety Management System

ISO14001: 2015/Environment Management System

ISO9001: 2015/Quality Management System



Front

Rear



Electrical Characteristics (STC)

Module type: TW***MAP-108-H-S (Black Frame)

Maximum power: Pmax (W)	400	405	410	415	420
Open circuit voltage: Voc (V)	37.08	37.23	37.38	37.53	37.68
Short circuit current: Isc (A)	13.77	13.87	13.92	13.95	13.98
Voltage at maximum power point: Vmp (V)	30.58	30.73	30.88	31.03	31.18
Current at maximum power point: Imp (A)	13.08	13.18	13.28	13.38	13.47
Module efficiency: η (%)	20.5	20.7	21.0	21.3	21.5

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass1.5, Measuring tolerance: ±3%

Electrical Characteristics (NMOT)

Maximum power: Pmax (W)	302.8	306.6	310.3	314.1	317.9
Open circuit voltage: Voc (V)	34.72	34.86	35	35.15	35.29
Short circuit current: Isc (A)	10.82	10.9	10.97	11.05	11.12
Voltage at maximum power point: Vmp (V)	28.76	28.9	29.04	29.18	29.32
Current at maximum power point: Imp (A)	10.52	10.6	10.68	10.76	10.84

NMOT: Irradiance 800W/m², Ambient Temperature 20 °C, Air Mass1.5, Wind Speed 1m/s

Mechanical Parameters

Cells	P-TPC
Orientation	108 (6×18)
Size	1722±2×1134±2×30mm
Weight	20.5kg
Glass	3.2mm AR coated heat strengthened glass
Backsheet	White
Frame	Anodized aluminum alloy black frame
Junction Box	IP68, 3 diodes
Cable	4.0mm ² , Positive: 280mm, Negative: 280mm, length can be customized
Connector	MC4 Compatible or MC4 original
Wind/Snow Load	2400Pa/5400Pa
Packaging	36pcs per pallet, 936pcs per 40'HC

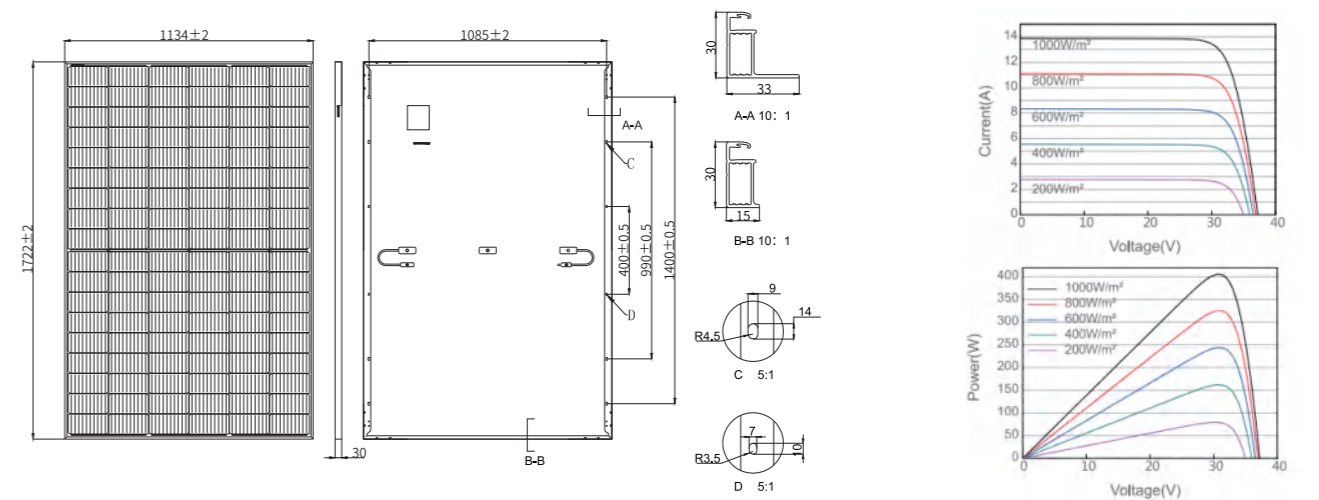
Operating Parameters

Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Power Output Tolerance	0~+5W

Temperature Ratings

Temperature Coefficient (Pmax)	-0.35%/°C
Temperature Coefficient (Voc)	-0.27%/°C
Temperature Coefficient (Isc)	+0.045%/°C
NMOT	45±2°C

Drawings (Unit: mm)



With technological progress and product updates, there may be deviations between the technical parameters of Tongwei's module products and the technical parameters contained in this specification, and Tongwei Solar has the right to adjust the technical parameters at any time without notifying the customer, the final interpretation of the technical specification is vested in Tongwei Solar.



TWMPD-54HB395-415W

P-type Half-cell Monofacial Full-black Module (54)

PRODUCT FEATURES



High Power Output
Low LCOE



Maximum Power
415W+



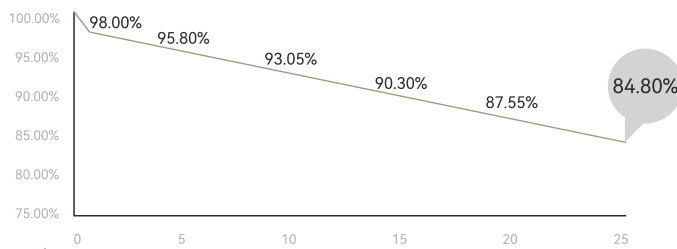
High
Reliability



Low
LID

POWER WARRANTY

1st year <2%, 0.55% power degradation per year from 2 to 25 years



15-year Warranty for Materials



25-year Warranty for Linear Power Output

MANAGEMENT SYSTEM AND PRODUCT CERTIFICATION

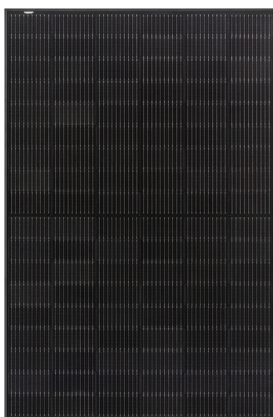
ISO9001: 2015/Quality Management System

ISO14001: 2015/Environment Management System

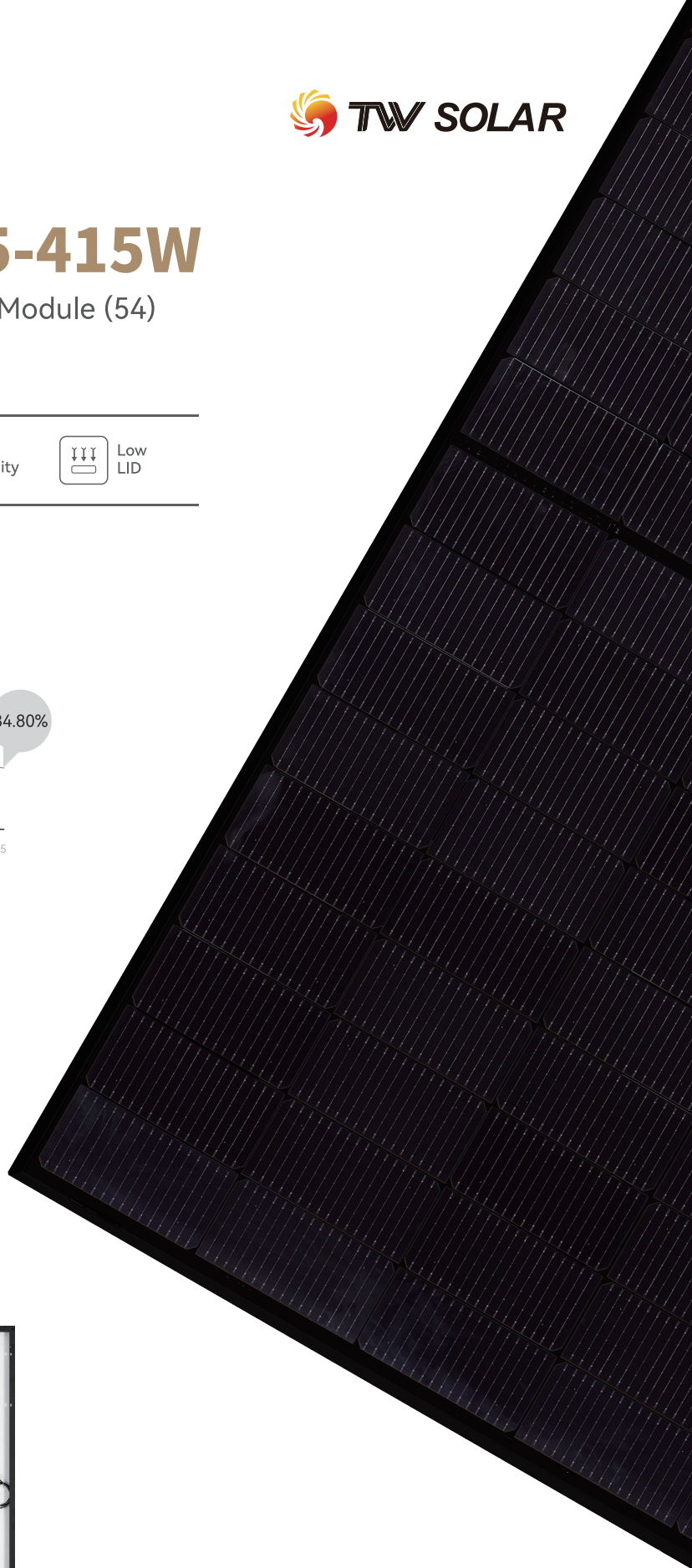
ISO45001: 2018/Occupational Health and Safety Management System



Front



Rear



Electrical Characteristics (STC)

Module Type: TWMPD-54HBXXX

Maximum Power: Pmax [W]	395	400	405	410	415
Open Circuit Voltage: Voc [V]	36.98	37.07	37.23	37.38	37.53
Short Circuit Current: Isc [A]	13.70	13.79	13.87	13.93	13.99
Voltage at Maximum Power: Vmp [V]	30.84	31.01	31.21	31.40	31.60
Current at Maximum Power: Imp [A]	12.81	12.90	12.98	13.06	13.14
Module Efficiency: η [%]	20.2	20.5	20.7	21.0	21.3

STC: Irradiance 1000W/m², Cell Temperature 25°C, Air Mass1.5, Measuring Tolerance: $\pm 3\%$

Electrical Characteristics (NMOT)

Maximum Power: Pmax [W]	298.2	302.0	306.0	310.0	314.0
Open Circuit Voltage: Voc [V]	34.80	34.88	35.12	35.31	35.50
Short Circuit Current: Isc [A]	10.96	11.03	11.10	11.16	11.22
Voltage at Maximum Power: Vmp [V]	29.10	29.26	29.47	29.68	29.89
Current at Maximum Power: Imp [A]	10.25	10.32	10.38	10.44	10.51

NMOT: Irradiance 800W/m², Ambient Temperature 20°C, Air Mass1.5, Wind Speed 1m/s

Mechanical Parameters

Cells	TPC
Cell Orientation	108{6X18}
Dimension	1722 \pm 2 X1134 \pm 2X30mm
Weight	20.5kg
Front Glass	3.2mm high transmittance, AR coated tempered glass
Backsheet	Black inside and white outside
Frame	Anodized aluminum alloy black frame
Junction Box	IP68, 3 diodes
Output Cable	4.0mm ²
Cable Length	+400mm, -200mm or \pm 1200mm, length can be customized
Wind/Snow Load	2400Pa/5400Pa
Packaging	36pcs per pallet, 936pcs per 40'HC

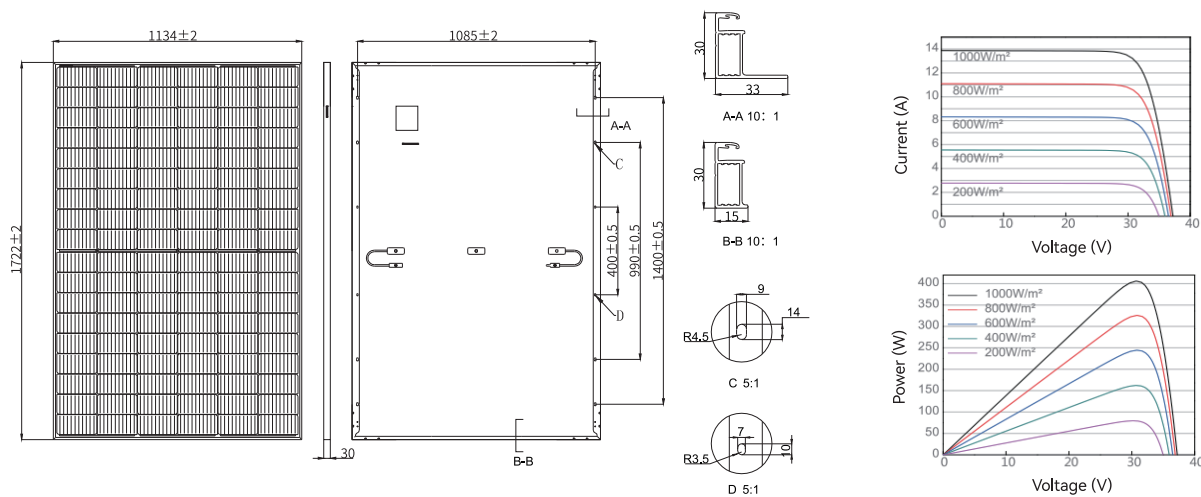
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Operational Temperature	-40°C~+85°C
Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	25A
Power Output Tolerance	0~+5W

Temperature Ratings

Temperature Coefficient (Pmax)	-0.34%/°C
Temperature Coefficient (Voc)	-0.27%/°C
Temperature Coefficient (Isc)	+0.045%/°C
NMOT	45 \pm 2°C

Drawings (Unit: mm)





Product Service

CERTIFICATE

No. Z2 090075 0010 Rev. 00

Holder of Certificate: **Tongwei Solar (Hefei) Co., Ltd.**

Building M2, M3, W1, W2
B2 and Accessorial Power Facility Site
No. 888, Changning Road
High-tech District
230088 Hefei City, Anhui Province
PEOPLE'S REPUBLIC OF CHINA

Certification Mark:



Product:

Crystalline Silicon Terrestrial Photovoltaic (PV) Modules
Mono-Crystalline Silicon Photovoltaic Module

The product was tested on a voluntary basis and complies with the essential requirements. The certification mark shown above can be affixed on the product. It is not permitted to alter the certification mark in any way. In addition, the certification holder must not transfer the certificate to third parties. This certificate is valid until the listed date, unless it is cancelled earlier. All applicable requirements of the testing and certification regulations of TÜV SÜD Group have to be complied. For details see: www.tuvsud.com/ps-cert

Test report no.: 701262216901-00

Valid until: 2027-09-15

Date, 2022-09-21

(Zhulin Zhang)



Product Service

CERTIFICATE

No. Z2 090075 0010 Rev. 00

Model(s):

TWxxxMAP-156-H, xxx=575 to 595 in step of 5
TWxxxMAP-144-H, xxx=530 to 550 in step of 5
TWxxxMAP-132-H, xxx=485 to 505 in step of 5
TWxxxMAP-120-H, xxx=445 to 460 in step of 5
TWxxxMAP-108-H, xxx=395 to 415 in step of 5
xxx is standing for rated output power at STC

Parameters:

Construction:	Framed, with Junction box, Cable and Connectors.
Safety Class:	Class II
Maximum System Voltage:	1500 V DC
Fire Safety Class:	Class C according to UL 790
Test Laboratory:	Yangzhou Opto-Electrical Products Testing Institute, No. 10 West Kaifa Road, Yangzhou, 225009 Jiangsu, P. R. China.

Tested according to:

IEC 61215-1:2016
IEC 61215-1-1:2016
IEC 61215-2:2016
IEC 61730-1:2016
IEC 61730-2:2016
EN 61215-1:2016
EN 61215-1-1:2016
EN 61215-2:2017
EN IEC 61730-1:2018
EN IEC 61730-1:2018/AC:2018-06
EN IEC 61730-2:2018
EN IEC 61730-2:2018/AC:2018-06



Product Service

Attestation of Conformity

No. N8A 090075 0012 Rev. 00

Holder of Certificate: **Tongwei Solar (Hefei) Co., Ltd.**

Building M2, M3, W1, W2
B2 and Accessorial Power Facility Site
No. 888, Changning Road
High-tech District
230088 Hefei City, Anhui Province
PEOPLE'S REPUBLIC OF CHINA

Product: **Crystalline Silicon Terrestrial Photovoltaic (PV) Modules**
Mono-Crystalline Silicon Photovoltaic Module

This Attestation of Conformity is issued on a voluntary basis according to the Low Voltage Directive 2014/35/EU relating to electrical equipment designed for use within certain voltage limits. It confirms that the listed equipment complies with the principal protection requirements of the directive and is based on the technical specifications applicable at the time of issuance. It refers only to the particular sample submitted for testing and certification. For details see: www.tuvsud.com/ps-cert

Test report no.: 704062242305-00

Date, 2022-10-31

(Zhulin Zhang)

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After preparation of the necessary technical documentation as well as the EU declaration of conformity the required CE marking can be affixed on the product. The declaration of conformity is issued under the sole responsibility of the manufacturer. Other relevant EU-directives have to be observed.



Product Service

Attestation of Conformity

No. N8A 090075 0012 Rev. 00

Model(s):

TWxxxMAP-156-H, xxx=575 to 595 in step of 5
 TWxxxMAP-144-H, xxx=530 to 550 in step of 5
 TWxxxMAP-132-H, xxx=485 to 505 in step of 5
 TWxxxMAP-120-H, xxx=445 to 460 in step of 5
 TWxxxMAP-108-H, xxx=395 to 415 in step of 5
 xxx is standing for rated output power at STC

Parameters:

Construction:	Framed, with Junction box, Cable and Connectors.
Safety Class:	Class II
Maximum System Voltage:	1500 V DC
Fire Safety Class:	Class C according to UL790
Test Laboratory:	Yangzhou Opto-Electrical Products Testing Institute, No. 10 West Kaifa Road, Yangzhou, 225009 Jiangsu, P. R. China.

Tested according to:

EN IEC 61730-1:2018
 EN IEC 61730-1:2018/AC:2018-06
 EN IEC 61730-2:2018
 EN IEC 61730-2:2018/AC:2018-06

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