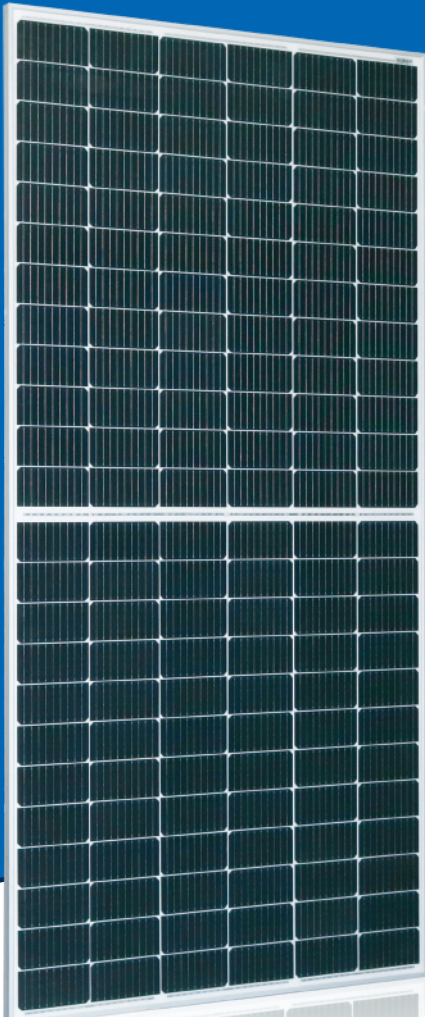


AstroTwins™

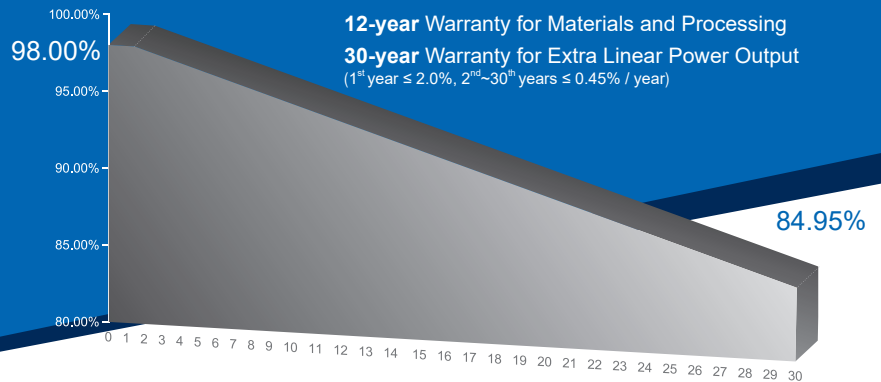
Enjoy the Energy of the Universe



430W~450W

P-type Monocrystalline PV Module
CHSM72M(DG)/F-BH Series (166)

CHSM72M(DG)/F-BH is bifacial module with white glazed glass



KEY FEATURES

- +5W OUTPUT POSITIVE TOLERANCE**
Guaranteed 0~+5W positive tolerance ensures power output reliability.
- EXCELLENT WEATHER RESISTANCE**
Reduces the cell micro-crack and extended product warranty.
- BIFACIAL POWER**
The backside makes use of the reflected and scattered light from the surroundings, the modules can yield up to 5%~25% power more, depending on the albedo.
- REDUCE INTERNAL MISMATCH LOSS**
Reduces mismatch loss and improves output.
- APPLICABLE FOR MULTI DIFFERENT ENVIRONMENTS**
The wide range of applications, such as BIPV, vertical installation, snow area, high humidity area and strong sandstorm area, etc.
- SNAIL TRAIL RESISTANCE**
Reduces the probability of snail trails with zero water vapor transmittance.

COMPREHENSIVE CERTIFICATES



First solar company which passed the TUV Nord IEC/TS 62941 certification audit.

For Global Market



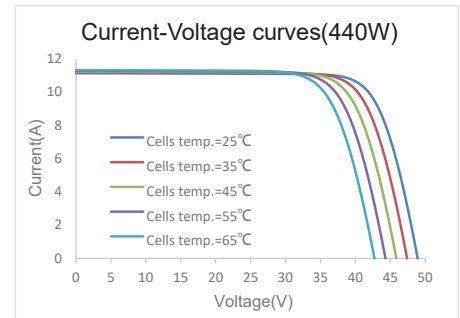
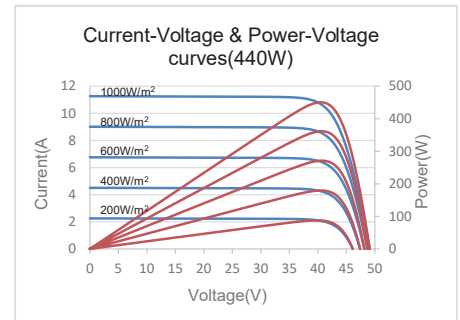
ASTROENERGY
A CHNT COMPANY

ELECTRICAL SPECIFICATIONS

Power rating (front)	430 Wp		435 Wp		440 Wp		445 Wp		450 Wp	
Testing Condition	Front	Back	Front	Back	Front	Back	Front	Back	Front	Back
STC rated output (P_{mpp}/Wp)*	430	301	435	304	440	308	445	311	450	315
Rated voltage (V_{mpp}/V) at STC	40.60	41.57	40.85	41.64	41.12	41.85	41.36	42.03	41.59	42.28
Rated current (I_{mpp}/A) at STC	10.59	7.24	10.65	7.30	10.70	7.36	10.76	7.40	10.82	7.45
Open circuit voltage (V_{oc}/V) at STC	48.60	47.33	48.90	47.56	49.11	47.83	49.44	47.99	49.78	48.25
Short circuit current (I_{sc}/A) at STC	11.06	7.95	11.12	7.99	11.20	8.05	11.25	8.10	11.30	8.16
Module efficiency	19.8%	13.8%	20.0%	14.0%	20.2%	14.2%	20.5%	14.3%	20.7%	14.5%
Temperature coefficient (P_{mpp})						- 0.35%/°C				
Temperature coefficient (I_{sc})						+0.04%/°C				
Temperature coefficient (V_{oc})						- 0.28%/°C				
Nominal module operating temperature (NMOT)						44±2°C				
Maximum system voltage (IEC/UL)						1500V _{DC}				
Number of diodes						3				
Junction box IP rating						IP 68				
Maximum series fuse rating						20 A				

STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5

CURVE



ELECTRICAL SPECIFICATIONS (Integrated power)

P_{mpp} gain	P_{mpp}	V_{mpp}	I_{mpp}	V_{oc}	I_{sc}
5%	462 Wp	41.12 V	11.24 A	49.11 V	11.69 A
10%	484 Wp	41.12 V	11.77 A	49.11 V	12.24 A
15%	506 Wp	41.12 V	12.31 A	49.11 V	12.80 A
20%	528 Wp	41.18 V	12.82 A	49.16 V	13.34 A
25%	550 Wp	41.18 V	13.36 A	49.16 V	13.90 A

Electrical characteristics with different rear power gain (reference to 440 W)

PACKING SPECIFICATIONS

① Weight (module only)	27.5 kg
② Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	1035 kg
Number of modules per 40'HQ container	792 pcs

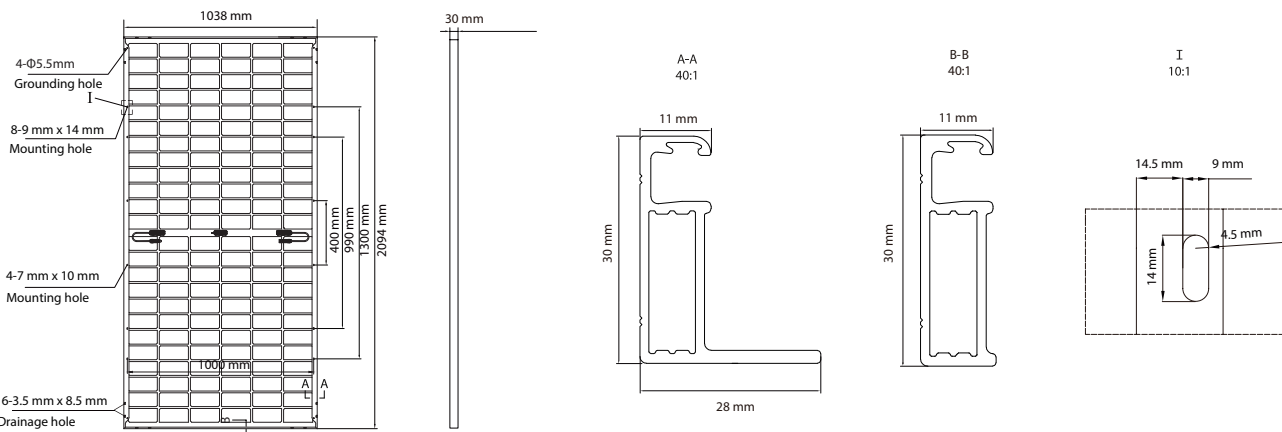
① Tolerance +/- 1.0kg
② Subject to sales contract

MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	2094 x 1038 x 30 mm
Frame technology	Aluminum, silver anodized
Glass thickness	2.0 mm
Cable length (IEC/UL)	Portrait: 300 mm Landscape: 1300 mm
Cable diameter (IEC/UL)	4 mm ² / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Connector type (IEC/UL)	MC4 compatible

① Refer to Astronergy crystalline installation manual or contact technical department.
Maximum Mechanical Test Load=1.5×Maximum Mechanical Design Load.

MODULE DIMENSION DETAILS



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