



PRODUCT DATASHEET

Empower the World

SH: 601877



A **CHNT** COMPANY

ASTRONERGY

PRODUCT CATALOG

AstroSemi™ Monofacial Series

166 Wafer

144 Half-Cell	
1. CHSM72M-HC	04
120 Half-Cell	
2. CHSM60M-HC	06
3. CHSM60M(BL)-HC	08

158.75 Wafer

144 Half-Cell	
1. CHSM72M-HC	10
120 Half-Cell	
2. CHSM60M-HC	12
3. CHSM60M(BL)-HC	14

AstroTwins™ Bifacial Series

166 Wafer

144 Half-Cell	
1. CHSM72M(DG)/F-BH	16
120 Half-Cell	
2. CHSM60M(DG)/F-BH	18

158.75 Wafer

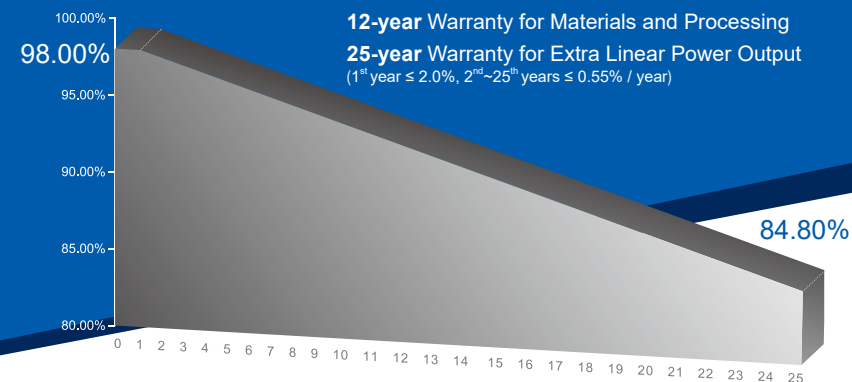
144 Half-Cell	
1. CHSM72M(DG)/F-BH	20
120 Half-Cell	
2. CHSM60M(DG)/F-BH	22

AstroSemi™

Incredible Power for Small Body

445W~455W

Monocrystalline PV Module
CHSM72M-HC Series (166)



KEY FEATURES

- +5W OUTPUT POSITIVE TOLERANCE**
Guaranteed 0~+5W positive tolerance ensure power output reliability.
- INNOVATIONAL HALF-CELL TECHNOLOGY**
Improve the module output, decrease the risk of micro cracking, enhance the module reliability.
- PERC INNOVATIVE PERC CELL TECHNOLOGY**
Excellent cell efficiency and output.
- REDUCE SHADOW LOSS**
Effectively reduce the effect of shading on the module surface.
- REDUCE INTERNAL MISMATCH LOSS**
Reduce mismatch loss and improve output.
- PASSED HAIL TEST**
Certified to hail resistance: ice ball size (d=25mm) and ice ball velocity (v=23m/s).
- Anti PID PID RESISTANCE**
Excellent PID resistance at 96 hours (@85°C /85%) test, and also can be improved to meet higher standards for the particularly harsh environment.

COMPREHENSIVE CERTIFICATES



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

For Global Market

ELECTRICAL SPECIFICATIONS

STC rated output (P _{mpp})*	445 Wp	450 Wp	455 Wp
Rated voltage (V _{mpp}) at STC	41.05 V	41.32 V	41.51 V
Rated current (I _{mpp}) at STC	10.84 A	10.89 A	10.96 A
Open circuit voltage (V _{oc}) at STC	48.80 V	49.05 V	49.35 V
Short circuit current (I _{sc}) at STC	11.30 A	11.37 A	11.44 A
Module efficiency	20.1%	20.4%	20.6%
Rated output (P _{mpp}) at NMOT	330.8 Wp	334.5 Wp	338.2 Wp
Rated voltage (V _{mpp}) at NMOT	38.12 V	38.37 V	38.55 V
Rated current (I _{mpp}) at NMOT	8.68 A	8.72 A	8.78 A
Open circuit voltage (V _{oc}) at NMOT	45.70 V	45.94 V	46.22 V
Short circuit current (I _{sc}) at NMOT	9.10 A	9.16 A	9.22 A
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		

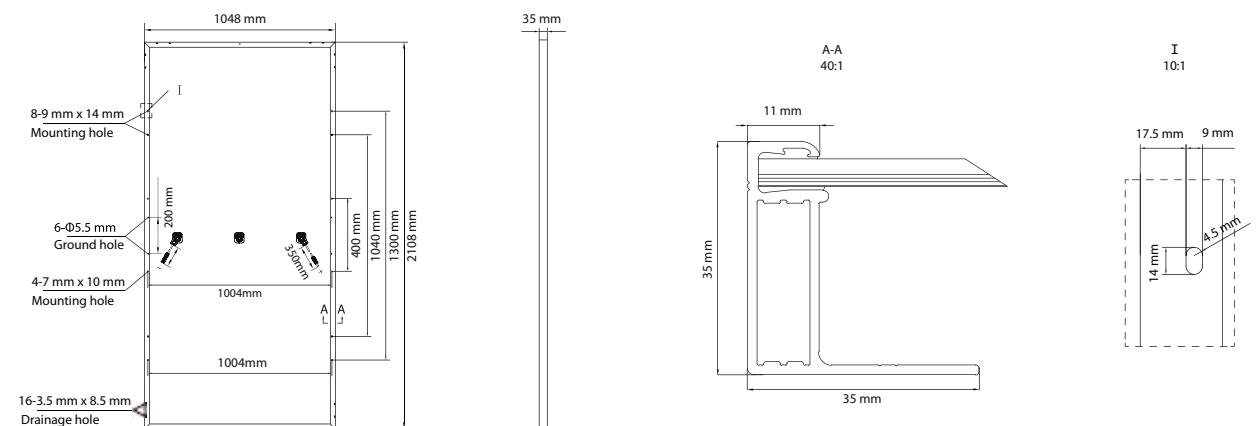
STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5
NMOT: Irradiance 800W/m², Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	2108 x 1048 x 35 mm
Frame technology	Aluminum, silver anodized
Module composition	Glass / EVA / Backsheet (white)
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 350 mm Landscape: 1300 mm
Cable diameter (IEC/UL)	4 mm ² / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Fire performance (IEC/UL)	Class C (IEC) or Type 4 (UL)
Connector type (IEC/UL)	MC4 compatible

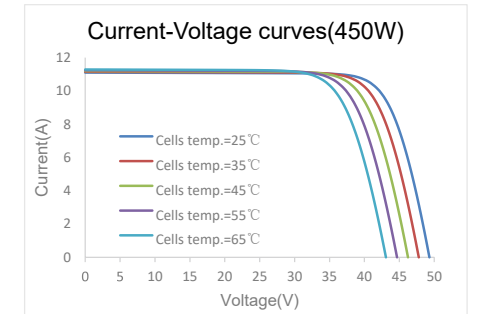
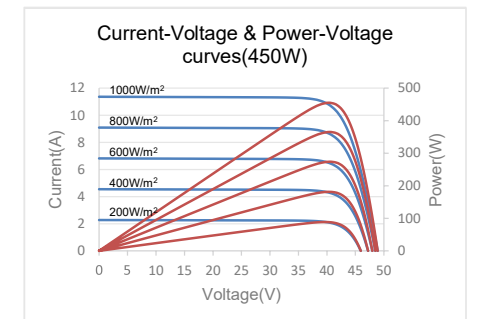
① Refer to Astronergy crystalline installation manual or contact technical department.
Maximum Mechanical Test Load=1.5×Maximum Mechanical Design Load.

MODULE DIMENSION DETAILS



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CURVE



PACKING SPECIFICATIONS

① Weight (module only)	24.0 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	791 kg
Number of modules per 40'HQ container	682 pcs

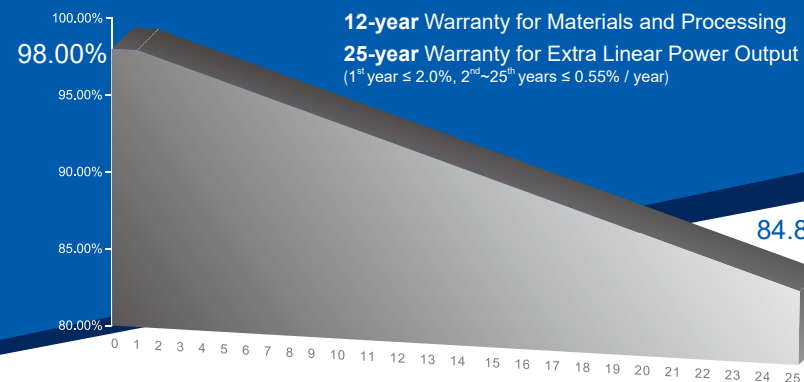
① Tolerance +/- 1.0kg
② Subject to sales contract

AstroSemi™

Incredible Power for Small Body

370W~380W

Monocrystalline PV Module
CHSM60M-HC Series (166)



KEY FEATURES

- +5W OUTPUT POSITIVE TOLERANCE**
Guaranteed 0~+5W positive tolerance ensure power output reliability.
- INNOVATIONAL HALF-CELL TECHNOLOGY**
Improve the module output, decrease the risk of micro cracking, enhance the module reliability.
- PERC INNOVATIVE PERC CELL TECHNOLOGY**
Excellent cell efficiency and output.
- REDUCE SHADOW LOSS**
Effectively reduce the effect of shading on the module surface.
- REDUCE INTERNAL MISMATCH LOSS**
Reduce mismatch loss and improve output.
- PASSED HAIL TEST**
Certified to hail resistance: ice ball size (d=25mm) and ice ball velocity (v=23m/s).
- Anti PID PID RESISTANCE**
Excellent PID resistance at 96 hours (@85°C /85%) test, and also can be improved to meet higher standards for the particularly harsh environment.

COMPREHENSIVE CERTIFICATES



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

For Global Market

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ELECTRICAL SPECIFICATIONS

STC rated output (P _{mpp})*	370 Wp	375 Wp	380 Wp
Rated voltage (V _{mpp}) at STC	33.98 V	34.28 V	34.51 V
Rated current (I _{mpp}) at STC	10.89 A	10.94 A	11.01 A
Open circuit voltage (V _{oc}) at STC	40.75 V	41.05 V	41.34 V
Short circuit current (I _{sc}) at STC	11.35 A	11.42 A	11.49 A
Module efficiency	20.0%	20.3%	20.5%
Rated output (P _{mpp}) at NMOT	275.9 Wp	279.6 Wp	283.4 Wp
Rated voltage (V _{mpp}) at NMOT	31.68 V	31.96 V	32.18 V
Rated current (I _{mpp}) at NMOT	8.71 A	8.75 A	8.81 A
Open circuit voltage (V _{oc}) at NMOT	38.31 V	38.59 V	38.87 V
Short circuit current (I _{sc}) at NMOT	9.13 A	9.19 A	9.24 A
Temperature coefficient (P _{mpp})	- 0.34%/°C		
Temperature coefficient (I _{sc})	+0.04%/°C		
Temperature coefficient (V _{oc})	- 0.27%/°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		

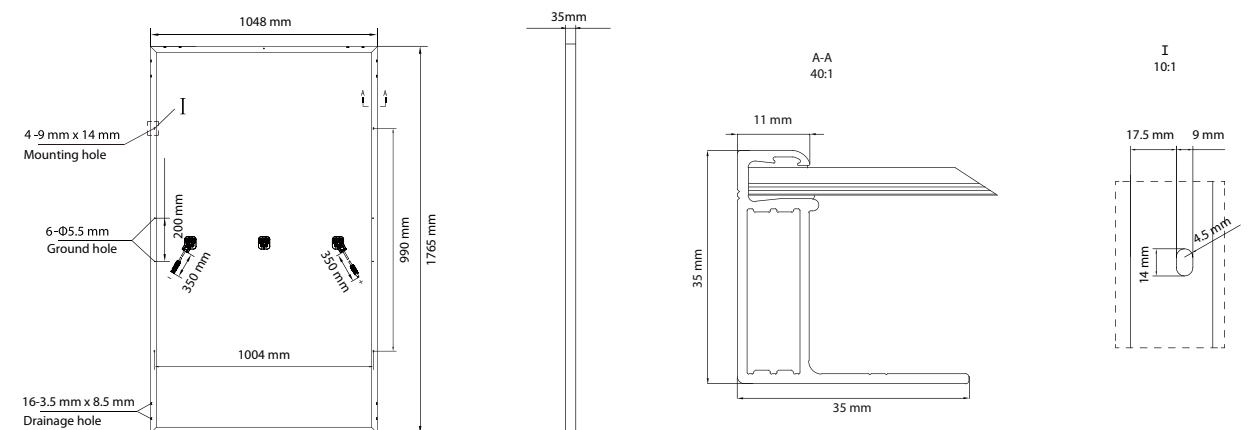
STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5
NMOT: Irradiance 800W/m², Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	1765 x 1048 x 35 mm
Frame technology	Aluminum, silver anodized
Module composition	Glass / EVA / Backsheet (white)
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 350 mm Landscape: 1200 mm
Cable diameter (IEC/UL)	4 mm ² / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Fire performance (IEC/UL)	Class C (IEC) or Type 4 (UL)
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

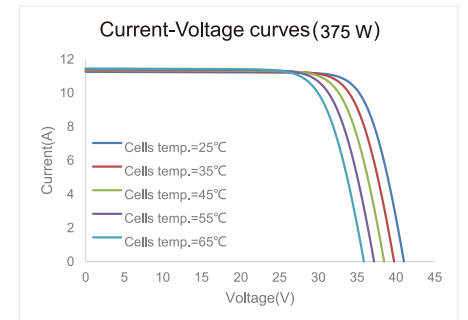
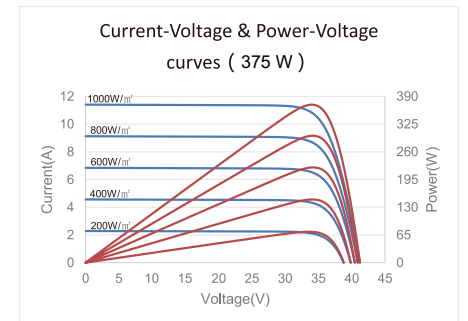


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CURVE



PACKING SPECIFICATIONS

① Weight (module only)	20.0 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	661 kg
Number of modules per 40'HQ container	806 pcs

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

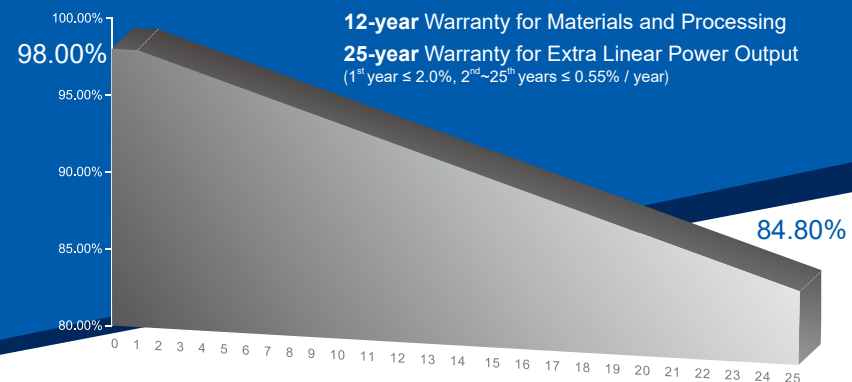
Astronergy 07-2020

AstroSemi™

Incredible Power for Small Body

355W~365W

Monocrystalline PV Module
CHSM60M(BL)-HC Series (166)



KEY FEATURES

- +5W OUTPUT POSITIVE TOLERANCE**
Guaranteed 0~+5W positive tolerance ensure power output reliability.
- INNOVATIONAL HALF-CELL TECHNOLOGY**
Improve the module output, decrease the risk of micro cracking, enhance the module reliability.
- PERC INNOVATIVE PERC CELL TECHNOLOGY**
Excellent cell efficiency and output.
- REDUCE SHADOW LOSS**
Effectively reduce the effect of shading on the module surface.
- REDUCE INTERNAL MISMATCH LOSS**
Reduce mismatch loss and improve output.
- THE-STATE-OF-THE-ART APPEARANCE**
Full black designed for a better aesthetic appearance and building integration.
- PID RESISTANCE**
Excellent PID resistance at 96 hours (@85°C /85%) test, and also can be improved to meet higher standards for the particularly harsh environment.

COMPREHENSIVE CERTIFICATES



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



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For Global Market

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ELECTRICAL SPECIFICATIONS

STC rated output (P _{mpp})*	355 Wp	360 Wp	365 Wp
Rated voltage (V _{mpp}) at STC	33.24 V	33.49 V	33.73 V
Rated current (I _{mpp}) at STC	10.68 A	10.75 A	10.82 A
Open circuit voltage (V _{oc}) at STC	39.80 V	40.14 V	40.41 V
Short circuit current (I _{sc}) at STC	11.15 A	11.21 A	11.29 A
Module efficiency	19.2%	19.5%	19.7%
Rated output (P _{mpp}) at NMOT	264.7 Wp	268.5 Wp	272.2 Wp
Rated voltage (V _{mpp}) at NMOT	30.99 V	31.22 V	31.45 V
Rated current (I _{mpp}) at NMOT	8.54 A	8.60 A	8.65 A
Open circuit voltage (V _{oc}) at NMOT	37.42 V	37.74 V	37.99 V
Short circuit current (I _{sc}) at NMOT	8.97 A	9.02 A	9.08 A
Temperature coefficient (P _{mpp})	- 0.34%/°C		
Temperature coefficient (I _{sc})	+0.04%/°C		
Temperature coefficient (V _{oc})	- 0.27%/°C		
Nominal module operating temperature (NMOT)	44±2°C		
Maximum system voltage (IEC/UL)	1000V _{DC}		
Number of diodes	3		
Junction box IP rating	IP 68		
Maximum series fuse rating	20 A		

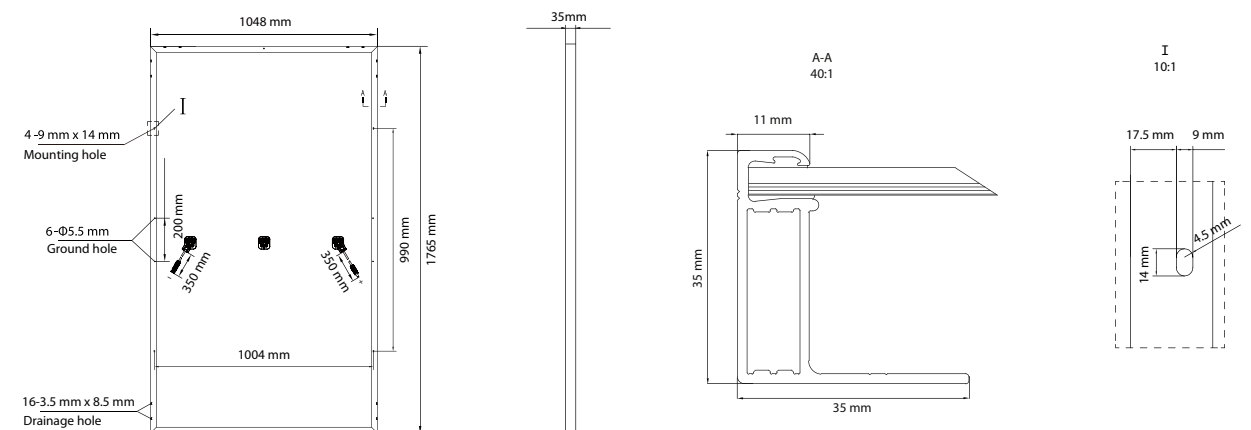
STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5
NMOT: Irradiance 800W/m², Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	1765 x 1048 x 35 mm
Frame technology	Aluminum, black anodized
Module composition	Glass / EVA / Backsheet (black)
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 350 mm Landscape: 1200 mm
Cable diameter (IEC/UL)	4 mm ² / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Fire performance (IEC/UL)	Class C (IEC) or Type 4 (UL)
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

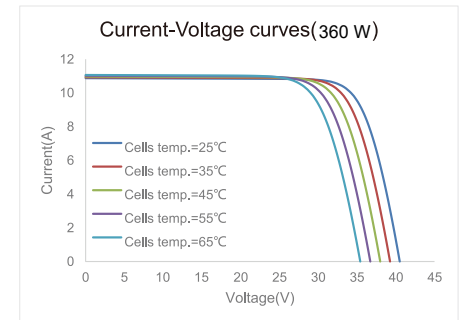
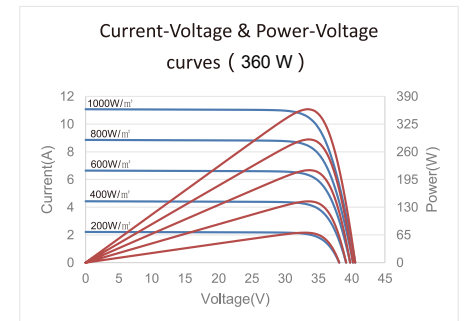


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CURVE



PACKING SPECIFICATIONS

① Weight (module only)	20.0 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	661 kg
Number of modules per 40'HQ container	806 pcs

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

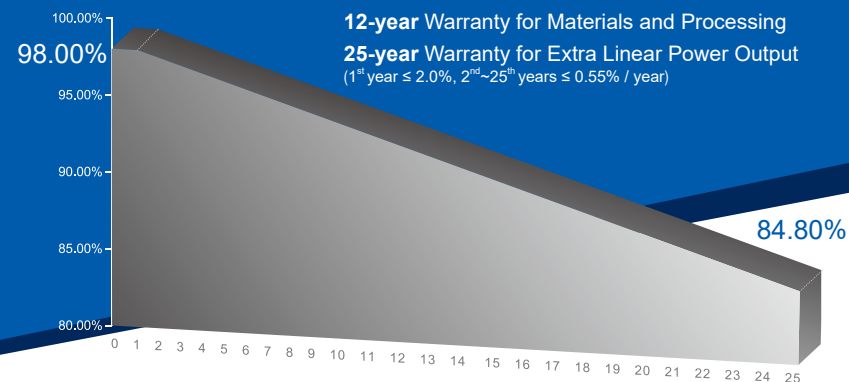
Astronergy 07-2020

AstroSemi™

Incredible Power for Small Body

405W~420W

Monocrystalline PV Module
CHSM72M-HC Series (158.75)



KEY FEATURES

- +5W OUTPUT POSITIVE TOLERANCE**
Guaranteed 0~+5W positive tolerance ensure power output reliability.
- INNOVATIONAL HALF-CELL TECHNOLOGY**
Improve the module output, decrease the risk of micro cracking, enhance the module reliability.
- INNOVATIVE PERC CELL TECHNOLOGY**
Excellent cell efficiency and output.
- REDUCE SHADOW LOSS**
Effectively reduce the effect of shading on the module surface.
- REDUCE INTERNAL MISMATCH LOSS**
Reduce mismatch loss and improve output.
- PASSED HAIL TEST**
Certified to hail resistance: ice ball size (d=25mm) and ice ball velocity (v=23m/s).
- PID RESISTANCE**
Excellent PID resistance at 96 hours (@85°C /85%) test, and also can be improved to meet higher standards for the particularly harsh environment.

COMPREHENSIVE CERTIFICATES



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



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ELECTRICAL SPECIFICATIONS

STC rated output (P _{mpp})*	405 Wp	410 Wp	415 Wp	420 Wp
Rated voltage (V _{mpp}) at STC	41.59 V	41.85 V	42.11 V	42.35 V
Rated current (I _{mpp}) at STC	9.74 A	9.80 A	9.86 A	9.92 A
Open circuit voltage (V _{oc}) at STC	49.53 V	49.80 V	50.06 V	50.32 V
Short circuit current (I _{sc}) at STC	10.31 A	10.38 A	10.45 A	10.52 A
Module efficiency	20.0%	20.3%	20.5%	20.8%
Rated output (P _{mpp}) at NMOT	301.1 Wp	304.8 Wp	308.5 Wp	312.2 Wp
Rated voltage (V _{mpp}) at NMOT	38.61 V	38.84 V	39.08 V	39.31 V
Rated current (I _{mpp}) at NMOT	7.80 A	7.85 A	7.89 A	7.94 A
Open circuit voltage (V _{oc}) at NMOT	46.38 V	46.64 V	46.88 V	47.12 V
Short circuit current (I _{sc}) at NMOT	8.31 A	8.36 A	8.42 A	8.48 A
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			

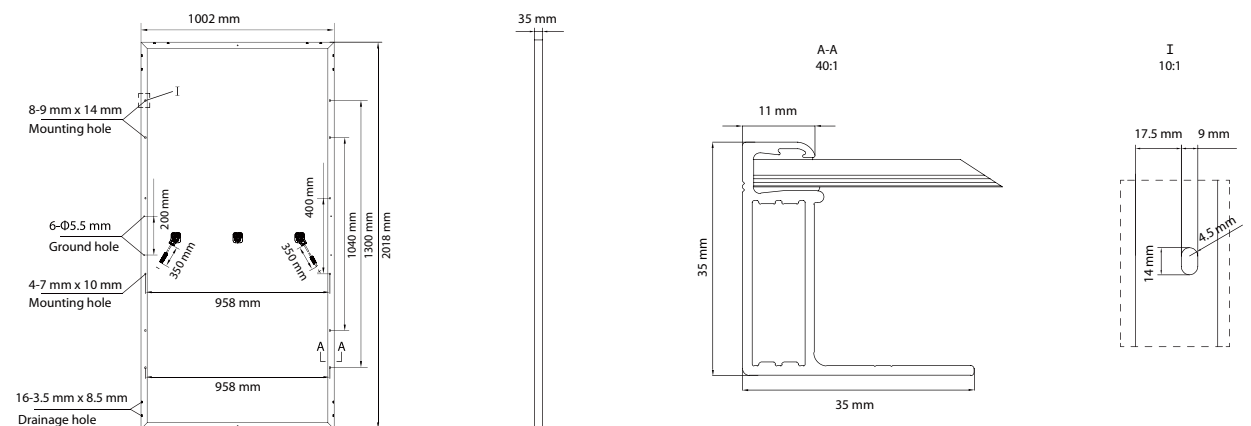
STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5
NMOT: Irradiance 800W/m², Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	2018 x 1002 x 35 mm
Frame technology	Aluminum, silver anodized
Module composition	Glass / EVA / Backsheet (white)
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 350 mm Landscape: 1200 mm
Cable diameter (IEC/UL)	4 mm ² / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Fire performance (IEC/UL)	Class C (IEC) or Type 4 (UL)
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.

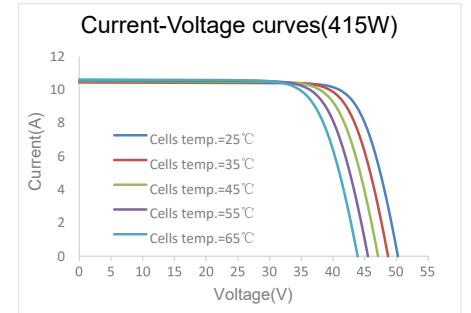
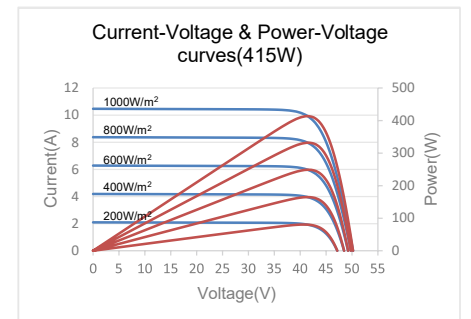
MODULE DIMENSION DETAILS



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CURVE



PACKING SPECIFICATIONS

① Weight (module only)	22.6 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	748 kg
Number of modules per 40'HQ container	682 pcs

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

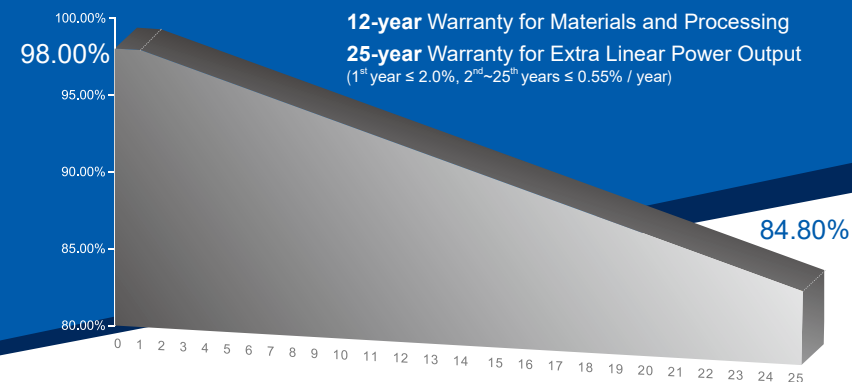
AstroSemi™

Incredible Power for Small Body

335W~350W

Monocrystalline PV Module

CHSM60M-HC Series (158.75)



KEY FEATURES

- +5W OUTPUT POSITIVE TOLERANCE**
Guaranteed 0~+5W positive tolerance ensure power output reliability.
- INNOVATIONAL HALF-CELL TECHNOLOGY**
Improve the module output, decrease the risk of micro cracking, enhance the module reliability.
- PERC INNOVATIVE PERC CELL TECHNOLOGY**
Excellent cell efficiency and output.
- REDUCE SHADOW LOSS**
Effectively reduce the effect of shading on the module surface.
- REDUCE INTERNAL MISMATCH LOSS**
Reduce mismatch loss and improve output.
- PASSED HAIL TEST**
Certified to hail resistance: ice ball size (d=25mm) and ice ball velocity (v=23m/s).
- Anti PID PID RESISTANCE**
Excellent PID resistance at 96 hours (@85°C /85%) test, and also can be improved to meet higher standards for the particularly harsh environment.

COMPREHENSIVE CERTIFICATES



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



ASTROENERGY
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For Global Market

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ELECTRICAL SPECIFICATIONS

STC rated output (P _{mpp})*	335 Wp	340 Wp	345 Wp	350 Wp
Rated voltage (V _{mpp}) at STC	34.44 V	34.69 V	34.96 V	35.22 V
Rated current (I _{mpp}) at STC	9.73 A	9.80 A	9.87 A	9.94 A
Open circuit voltage (V _{oc}) at STC	41.61 V	41.88 V	42.16 V	42.44 V
Short circuit current (I _{sc}) at STC	10.22 A	10.30 A	10.38 A	10.46 A
Module efficiency	19.8%	20.1%	20.3%	20.6%
Rated output (P _{mpp}) at NMOT	249.8 Wp	253.5 Wp	257.3 Wp	261.0 Wp
Rated voltage (V _{mpp}) at NMOT	32.10 V	32.35 V	32.59 V	32.83 V
Rated current (I _{mpp}) at NMOT	7.78 A	7.84 A	7.89 A	7.95 A
Open circuit voltage (V _{oc}) at NMOT	39.12 V	39.37 V	39.64 V	39.90 V
Short circuit current (I _{sc}) at NMOT	8.22 A	8.28 A	8.35 A	8.41 A
Temperature coefficient (P _{mpp})	- 0.34%/°C			
Temperature coefficient (I _{sc})	+0.04%/°C			
Temperature coefficient (V _{oc})	- 0.27%/°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			

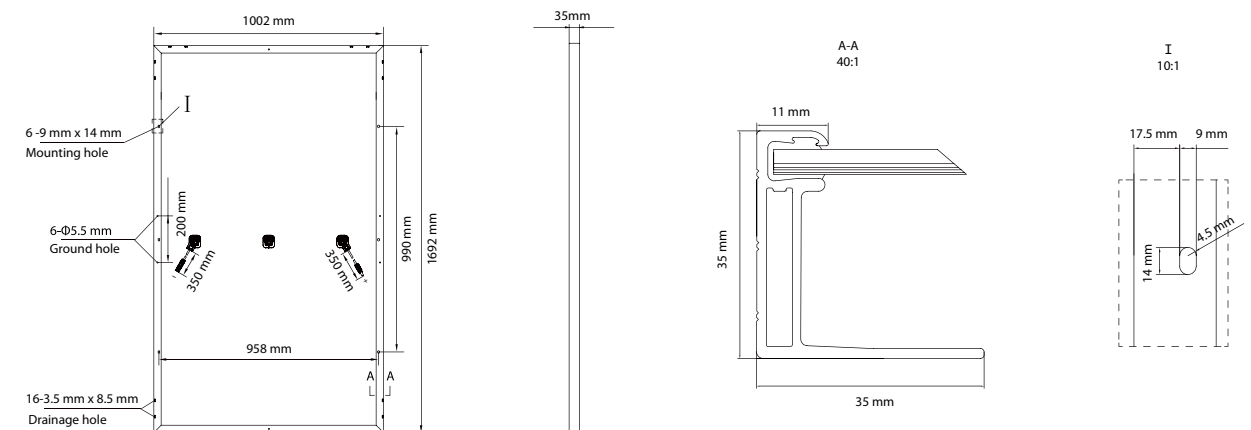
STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5
NMOT: Irradiance 800W/m², Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	1692 x 1002 x 35 mm
Frame technology	Aluminum, silver anodized
Module composition	Glass / EVA / Backsheet (white)
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 350 mm Landscape: 1100 mm
Cable diameter (IEC/UL)	4 mm ² / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Fire performance (IEC/UL)	Class C (IEC) or Type 4 (UL)
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

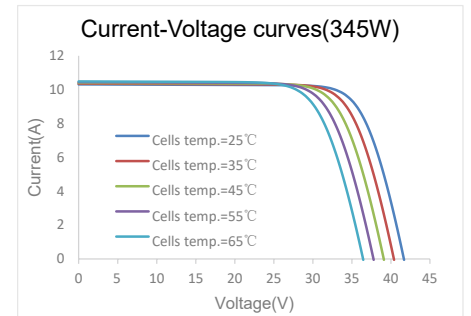
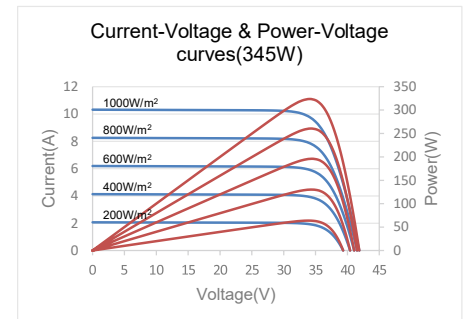


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CURVE



PACKING SPECIFICATIONS

① Weight (module only)	19.1 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	631 kg
Number of modules per 40'HQ container	806 pcs

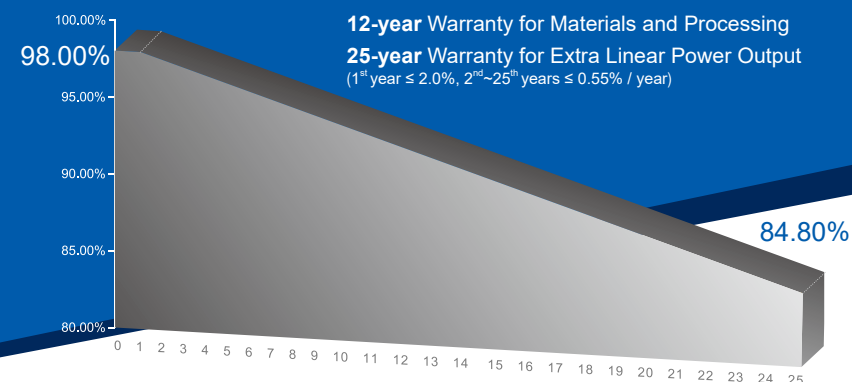
① Tolerance +/- 1.0kg
② Subject to sales contract

Astronergy 07-2020

320W~335W

Monocrystalline PV Module

CHSM60M(BL)-HC Series (158.75)



KEY FEATURES

- +5W OUTPUT POSITIVE TOLERANCE**
Guaranteed 0~+5W positive tolerance ensure power output reliability.
- INNOVATIONAL HALF-CELL TECHNOLOGY**
Improve the module output, decrease the risk of micro cracking, enhance the module reliability.
- PERC INNOVATIVE PERC CELL TECHNOLOGY**
Excellent cell efficiency and output.
- REDUCE SHADOW LOSS**
Effectively reduce the effect of shading on the module surface.
- REDUCE INTERNAL MISMATCH LOSS**
Reduce mismatch loss and improve output.
- THE-STATE-OF-THE-ART APPEARANCE**
Full black designed for a better aesthetic appearance and building integration.
- Anti PID PID RESISTANCE**
Excellent PID resistance at 96 hours (@85°C /85%) test, and also can be improved to meet higher standards for the particularly harsh environment.

COMPREHENSIVE CERTIFICATES



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



ASTROENERGY
A CHINT COMPANY

ELECTRICAL SPECIFICATIONS

STC rated output (P _{mpp})*	320 Wp	325 Wp	330 Wp	335 Wp
Rated voltage (V _{mpp}) at STC	33.68 V	33.93 V	34.17 V	34.44 V
Rated current (I _{mpp}) at STC	9.50 A	9.58 A	9.66 A	9.73 A
Open circuit voltage (V _{oc}) at STC	40.72 V	41.03 V	41.32 V	41.61 V
Short circuit current (I _{sc}) at STC	9.98 A	10.06 A	10.14 A	10.22 A
Module efficiency	18.9%	19.2%	19.5%	19.8%
Rated output (P _{mpp}) at NMOT	238.6 Wp	242.4 Wp	246.1 Wp	249.8 Wp
Rated voltage (V _{mpp}) at NMOT	31.39 V	31.63 V	31.85 V	32.10 V
Rated current (I _{mpp}) at NMOT	7.60 A	7.66 A	7.73 A	7.78 A
Open circuit voltage (V _{oc}) at NMOT	38.28 V	38.57 V	38.85 V	39.12 V
Short circuit current (I _{sc}) at NMOT	8.03 A	8.09 A	8.16 A	8.22 A
Temperature coefficient (P _{mpp})	- 0.34%/°C			
Temperature coefficient (I _{sc})	+0.04%/°C			
Temperature coefficient (V _{oc})	- 0.27%/°C			
Nominal module operating temperature (NMOT)	44±2°C			
Maximum system voltage (IEC/UL)	1000V _{DC}			
Number of diodes	3			
Junction box IP rating	IP 68			
Maximum series fuse rating	20 A			

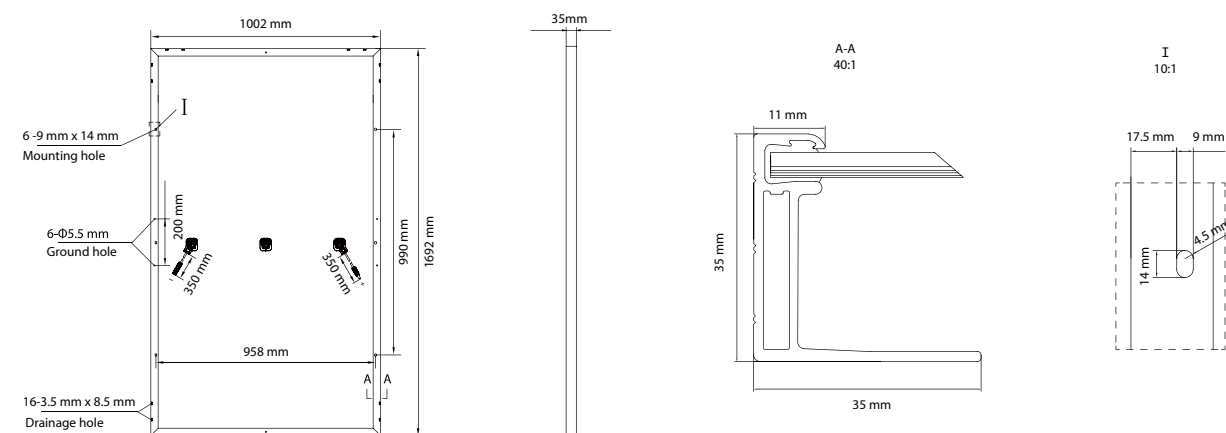
STC: Irradiance 1000W/m², Cell Temperature 25°C, AM=1.5
NMOT: Irradiance 800W/m², Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

MECHANICAL SPECIFICATIONS

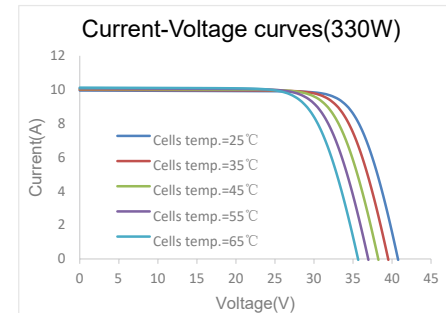
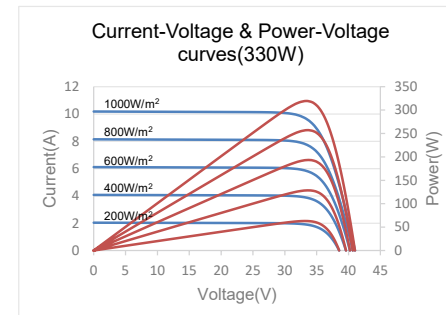
Outer dimensions (L x W x H)	1692 x 1002 x 35 mm
Frame technology	Aluminum, black anodized
Module composition	Glass / EVA / Backsheet (black)
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 350 mm Landscape: 1100 mm
Cable diameter (IEC/UL)	4 mm ² / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Fire performance (IEC/UL)	Class C (IEC) or Type 4 (UL)
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



CURVE



PACKING SPECIFICATIONS

① Weight (module only)	19.1 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	631 kg
Number of modules per 40'HQ container	806 pcs

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

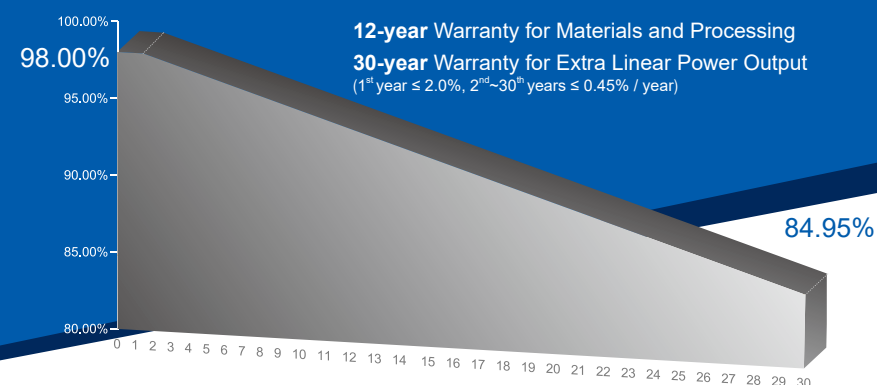
AstroTwins™

Enjoy the Energy of the Universe

435W~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 ensure power output reliability.

EXCELLENT WEATHER RESISTANCE
Reduce the cell micro cracking 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%~30% power more, depending on the albedo.

REDUCE INTERNAL MISMATCH LOSS
Reduce mismatch loss and improve 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
Reduce 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

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ELECTRICAL SPECIFICATIONS

Power rating (front)	435 Wp		440 Wp		445 Wp		450 Wp	
Testing Condition	Front	Back	Front	Back	Front	Back	Front	Back
STC rated output (P_{mpp}/Wp)*	435	304	440	308	445	311	450	315
Rated voltage (V_{mpp}/V) at STC	40.85	41.64	41.12	41.85	41.36	42.03	41.59	42.28
Rated current (I_{mpp}/A) at STC	10.65	7.30	10.70	7.36	10.76	7.40	10.82	7.45
Open circuit voltage (V_{oc}/V) at STC	48.90	47.56	49.11	47.83	49.44	47.99	49.78	48.25
Short circuit current (I_{sc}/A) at STC	11.12	7.99	11.20	8.05	11.25	8.10	11.30	8.16
Module efficiency	19.4%	13.6%	19.6%	13.7%	19.9%	13.9%	20.1%	14.1%
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

ELECTRICAL SPECIFICATIONS (Integrated power)

P_{mpp} gain	P_{mpp}	V_{mpp}	I_{mpp}	V_{oc}	I_{sc}
5%	467 Wp	41.12 V	11.36 A	49.11 V	11.81 A
10%	489 Wp	41.12 V	11.89 A	49.11 V	12.37 A
15%	511 Wp	41.12 V	12.43 A	49.11 V	12.93 A
20%	534 Wp	41.02 V	13.02 A	49.21 V	13.48 A
25%	556 Wp	41.02 V	13.55 A	49.21 V	14.04 A

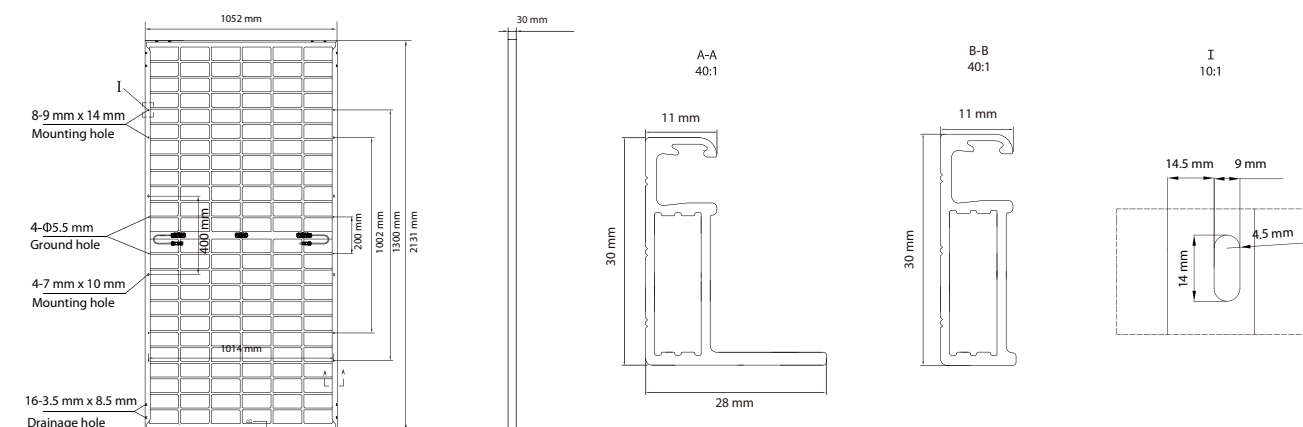
Electrical characteristics with different rear power gain (reference to 445W)

MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	2131 x 1052 x 30 mm
Frame technology	Aluminum, silver anodized
Glass thickness	2.0 mm
Cable length (IEC/UL)	Portrait: 350 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

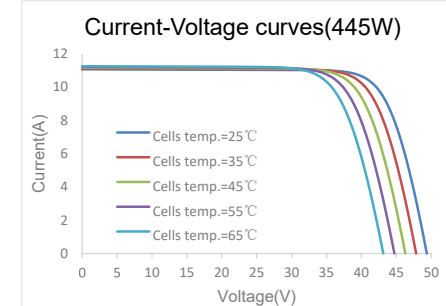
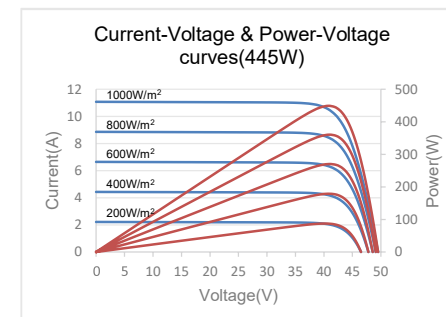


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PACKING SPECIFICATIONS

① Weight (module only)	28.5 kg
② Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	1085 kg
Number of modules per 40'HQ container	792 pcs

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

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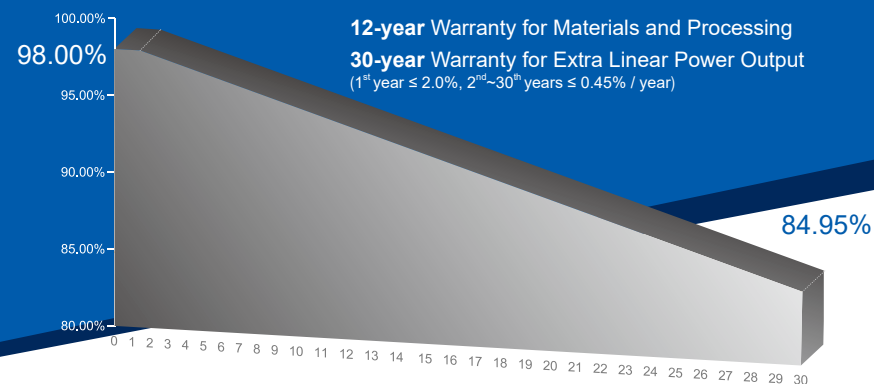
AstroTwins™

Enjoy the Energy of the Universe

365W~380W

P-type Monocrystalline PV Module
CHSM60M(DG)/F-BH Series (166)

CHSM60M(DG)/F-BH is bifacial module with white glazed glass



KEY FEATURES

+5W OUTPUT POSITIVE TOLERANCE
Guaranteed 0~+5W positive tolerance ensure power output reliability.

EXCELLENT WEATHER RESISTANCE
Reduce the cell micro cracking 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%~30% power more, depending on the albedo.

REDUCE INTERNAL MISMATCH LOSS
Reduce mismatch loss and improve 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
Reduce 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

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ELECTRICAL SPECIFICATIONS

Power rating (front)	365 Wp		370 Wp		375 Wp		380 Wp	
Testing Condition	Front	Back	Front	Back	Front	Back	Front	Back
STC rated output (P_{mpp}/Wp)*	365	255	370	259	375	262	380	266
Rated voltage (V_{mpp}/V) at STC	34.11	34.65	34.39	35.00	34.66	35.17	34.93	35.42
Rated current (I_{mpp}/A) at STC	10.70	7.36	10.76	7.40	10.82	7.45	10.88	7.51
Open circuit voltage (V_{oc}/V) at STC	40.74	39.60	41.11	39.97	41.48	40.13	41.81	40.45
Short circuit current (I_{sc}/A) at STC	11.20	8.05	11.25	8.10	11.30	8.16	11.36	8.22
Module efficiency	19.4%	13.5%	19.6%	13.7%	19.9%	13.9%	20.2%	14.1%
Temperature coefficient (P_{mpp})	- 0.34%/°C							
Temperature coefficient (I_{sc})	+0.04%/°C							
Temperature coefficient (V_{oc})	- 0.27%/°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

ELECTRICAL SPECIFICATIONS (Integrated power)

P_{mpp} gain	P_{mpp}	V_{mpp}	I_{mpp}	V_{oc}	I_{sc}
5%	388 Wp	34.39 V	11.28 A	41.11 V	11.72 A
10%	407 Wp	34.39 V	11.83 A	41.11 V	12.30 A
15%	425 Wp	34.39 V	12.36 A	41.11 V	12.84 A
20%	444 Wp	34.29 V	12.95 A	41.21 V	13.38 A
25%	462 Wp	34.29 V	13.47 A	41.21 V	13.93 A

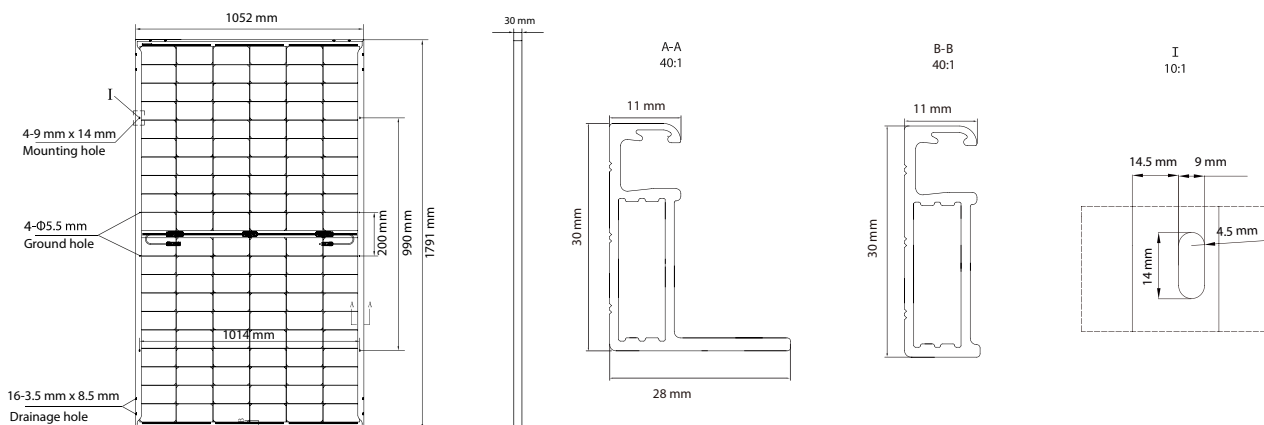
Electrical characteristics with different rear power gain (reference to 370W)

MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	1791 x 1052 x 30 mm
Frame technology	Aluminum, silver anodized
Glass thickness	2.0 mm
Cable length (IEC/UL)	Portrait: 350 mm Landscape: 1200 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

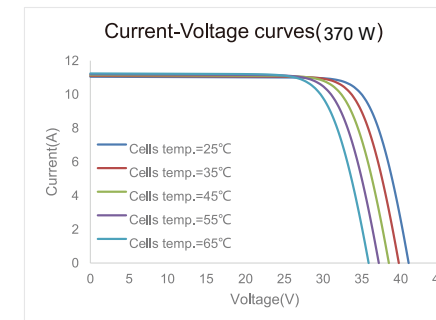
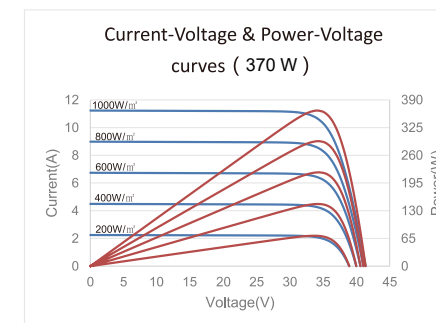


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PACKING SPECIFICATIONS

① Weight (module only)	23.5 kg
② Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	891 kg
Number of modules per 40'HQ container	864 pcs

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

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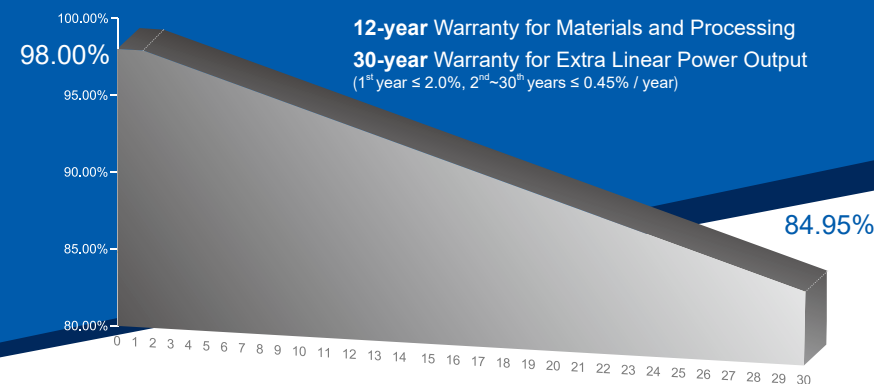
AstroTwins™

Enjoy the Energy of the Universe

400W~415W

P-type Monocrystalline PV Module
CHSM72M(DG)/F-BH Series (158.75)

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



KEY FEATURES

+5W OUTPUT POSITIVE TOLERANCE
Guaranteed 0~+5W positive tolerance ensure power output reliability.

EXCELLENT WEATHER RESISTANCE
Reduce the cell micro cracking 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%~30% power more, depending on the albedo.

REDUCE INTERNAL MISMATCH LOSS
Reduce mismatch loss and improve 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
Reduce 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

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ELECTRICAL SPECIFICATIONS

Power rating (front)	400 Wp		405 Wp		410 Wp		415 Wp	
Testing Condition	Front	Back	Front	Back	Front	Back	Front	Back
STC rated output (P_{mpp}/Wp)*	400	282	405	285	410	289	415	292
Rated voltage (V_{mpp}/V) at STC	40.67	40.88	40.89	41.10	41.10	41.31	41.31	41.52
Rated current (I_{mpp}/A) at STC	9.84	6.89	9.91	6.94	9.98	6.99	10.05	7.04
Open circuit voltage (V_{oc}/V) at STC	48.24	46.82	48.42	46.99	48.60	47.17	48.78	47.34
Short circuit current (I_{sc}/A) at STC	10.30	7.22	10.38	7.28	10.46	7.33	10.54	7.39
Module efficiency	19.4%	13.7%	19.7%	13.8%	19.9%	14.0%	20.2%	14.2%
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

ELECTRICAL SPECIFICATIONS (Integrated power)

P_{mpp} gain	P_{mpp}	V_{mpp}	I_{mpp}	V_{oc}	I_{sc}
5%	431 Wp	41.10 V	10.47 A	48.60 V	10.98 A
10%	451 Wp	41.10 V	10.97 A	48.60 V	11.51 A
15%	472 Wp	41.00 V	11.50 A	48.70 V	12.03 A
20%	492 Wp	41.00 V	12.00 A	48.70 V	12.55 A
25%	513 Wp	41.00 V	12.50 A	48.70 V	13.08 A

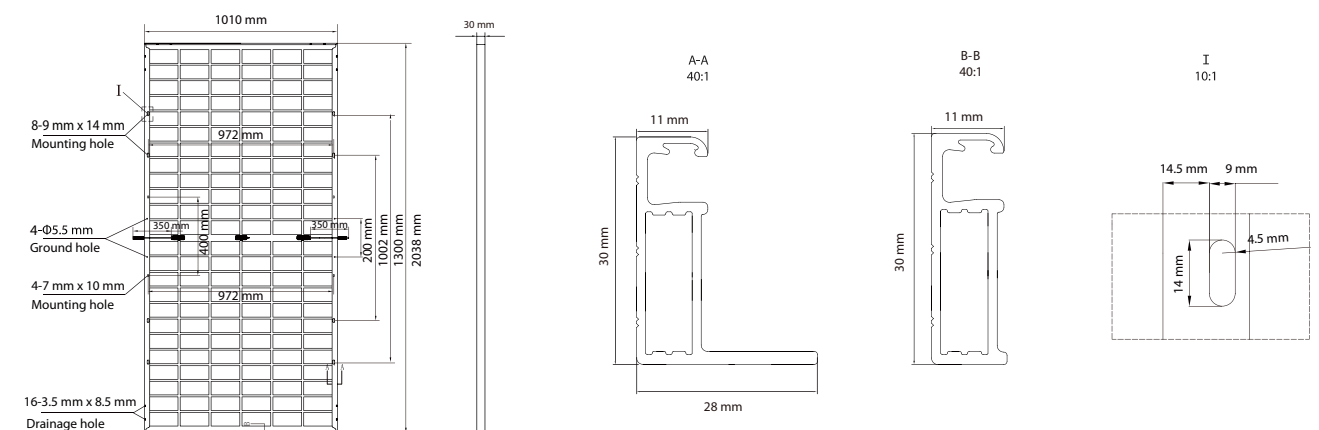
Electrical characteristics with different rear power gain (reference to 410W)

MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	2038 x 1010 x 30 mm
Frame technology	Aluminum, silver anodized
Glass thickness	2.0 mm
Cable length (IEC/UL)	Portrait: 350 mm Landscape: 1200 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

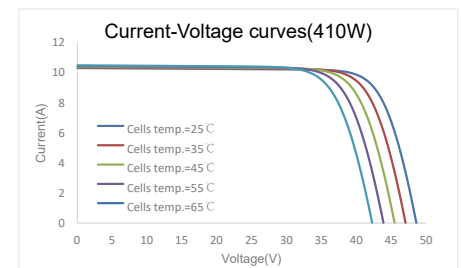
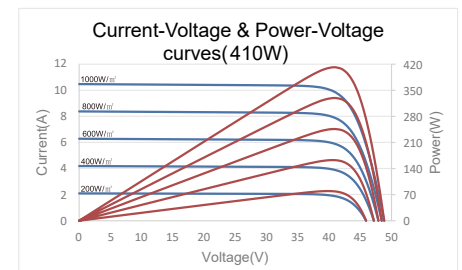


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CURVE



PACKING SPECIFICATIONS

① Weight (module only)	26.3 kg
② Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	994 kg
Number of modules per 40'HQ container	792 pcs

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

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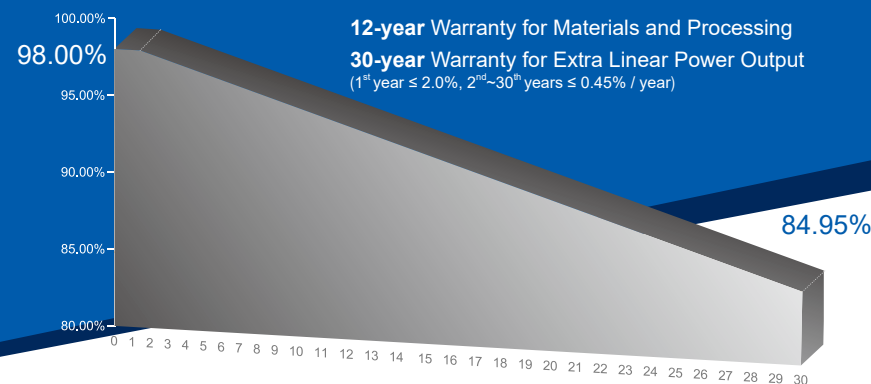
AstroTwins™

Enjoy the Energy of the Universe

335W~350W

P-type Monocrystalline PV Module
CHSM60M(DG)/F-BH Series (158.75)

CHSM60M(DG)/F-BH is bifacial module with white glazed glass



KEY FEATURES

+5W OUTPUT POSITIVE TOLERANCE
Guaranteed 0~+5W positive tolerance ensure power output reliability.

EXCELLENT WEATHER RESISTANCE
Reduce the cell micro cracking 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%~30% power more, depending on the albedo.

REDUCE INTERNAL MISMATCH LOSS
Reduce mismatch loss and improve 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
Reduce 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

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ELECTRICAL SPECIFICATIONS

Power rating (front)	335 Wp		340 Wp		345 Wp		350 Wp	
Testing Condition	Front	Back	Front	Back	Front	Back	Front	Back
STC rated output (P_{mpp}/Wp)*	335	236	340	239	345	243	350	247
Rated voltage (V_{mpp}/V) at STC	34.44	34.62	34.67	34.85	34.90	35.08	35.13	35.31
Rated current (I_{mpp}/A) at STC	9.73	6.82	9.81	6.87	9.89	6.93	9.97	6.98
Open circuit voltage (V_{oc}/V) at STC	40.80	39.60	40.99	39.78	41.18	39.96	41.37	40.15
Short circuit current (I_{sc}/A) at STC	10.14	7.11	10.21	7.16	10.28	7.21	10.35	7.26
Module efficiency	19.4%	13.6%	19.6%	13.8%	19.9%	14.0%	20.2%	14.3%
Temperature coefficient (P_{mpp})	- 0.34%/°C							
Temperature coefficient (I_{sc})	+0.04%/°C							
Temperature coefficient (V_{oc})	- 0.27%/°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

ELECTRICAL SPECIFICATIONS (Integrated power)

P_{mpp} gain	P_{mpp}	V_{mpp}	I_{mpp}	V_{oc}	I_{sc}
5%	362 Wp	34.90 V	10.38 A	41.18 V	10.79 A
10%	380 Wp	34.90 V	10.87 A	41.18 V	11.31 A
15%	397 Wp	34.80 V	11.40 A	41.28 V	11.82 A
20%	414 Wp	34.80 V	11.90 A	41.28 V	12.34 A
25%	431 Wp	34.80 V	12.39 A	41.28 V	12.85 A

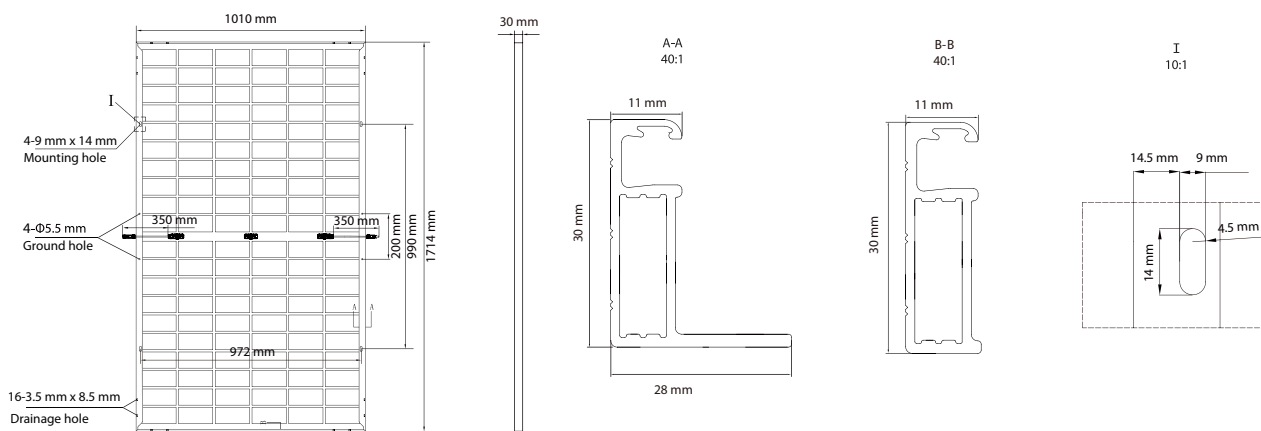
Electrical characteristics with different rear power gain (reference to 345W)

MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	1714 x 1010 x 30 mm
Frame technology	Aluminum, silver anodized
Glass thickness	2.0 mm
Cable length (IEC/UL)	Portrait: 350 mm Landscape: 1100 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

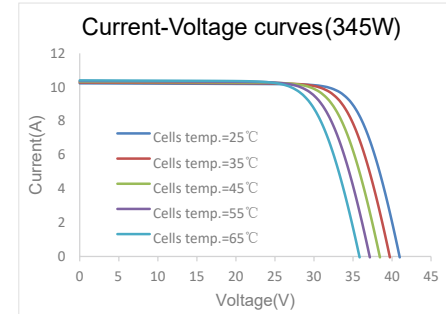
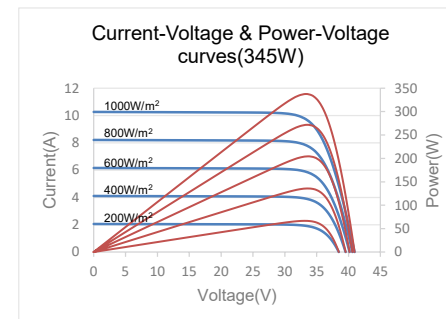


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CURVE



PACKING SPECIFICATIONS

① Weight (module only)	22.1 kg
② Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	838 kg
Number of modules per 40'HQ container	936 pcs

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

Astronergy 07-2020



CORPORATE HEADQUARTERS

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1335 Bin'an Road, Binjiang District
Hangzhou, Zhejiang Province, 310053
China
Tel: + 86 571 5603 1888
Fax: + 86 571 5603 2383

MANUFACTURING PLANTS

Hangzhou, Haining, Thailand