

# PRODUCT DATASHEET

Empower the World

SH: 601877



A **CHNT** COMPANY



**ASTRONERGY**

# PRODUCT CATALOG

## ASTRO 5 Semi

CHSM72M-HC ----- 4 / 5

## ASTRO 5 Twins

CHSM72M(DG)/F-BH ----- 6 / 7



## ASTRO 5s

CHSM54M-HC ----- 8 / 9

CHSM54M(BL)-HC ----- 10/11



## ASTRO 4 Semi

CHSM72M-HC ----- 12/13

CHSM60M-HC ----- 14/15

CHSM60M(BL)-HC ----- 16/17

## ASTRO 4 Twins

CHSM72M(DG)/F-BH ----- 18/19

CHSM60M(DG)/F-BH ----- 20/21



# ASTRO 5 Semi

Create Sustainable and Efficient Green Energy



## 530W~550W

Monocrystalline PV Module  
CHSM72M-HC Series (182)



### KEY FEATURES

**+5W**

**OUTPUT POSITIVE TOLERANCE**

Guaranteed 0~+5W positive tolerance to ensure power output.



**NON-DESTRUCTIVE CUTTING**

Higher bending strength of cells and mechanical properties of modules.



**HIGH CUSTOMER VALUE**

Lower BOS cost and LCOE.



**INNOVATIONAL HALF-CUT&MULTI-BUSBAR TECHNOLOGY**

Lower risk of microcrack, better shading tolerance, higher reliability.



**SUPER PERC+ CELL TECHNOLOGY**

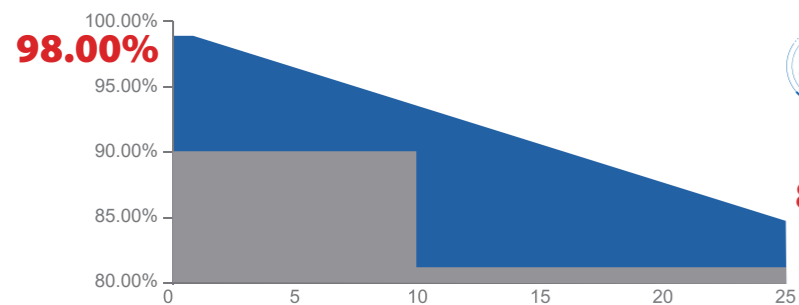
Higher module power and module efficiency, lower power degradation.



**Anti PID**

Excellent PID resistance.

### WARRANTY



**12年** Warranty for Materials and Processing

**25年** Warranty for Extra Linear Power Output  
(1<sup>st</sup> year ≤ 2.0%, 2<sup>nd</sup>~25<sup>th</sup> years ≤ 0.55% / year)

**84.80%**

For Global Market

### ELECTRICAL SPECIFICATIONS

STC rated output (P <sub>mpp</sub> )	530 Wp	535 Wp	540 Wp	545 Wp	550 Wp
Rated voltage (V <sub>mpp</sub> ) at STC	41.43 V	41.60 V	41.76 V	41.93 V	42.10 V
Rated current (I <sub>mpp</sub> ) at STC	12.79 A	12.86 A	12.93 A	13.00 A	13.06 A
Open circuit voltage (V <sub>oc</sub> ) at STC	49.30 V	49.50 V	49.70 V	49.90 V	50.10 V
Short circuit current (I <sub>sc</sub> ) at STC	13.52 A	13.61 A	13.72 A	13.81 A	13.90 A
Module efficiency	20.7%	20.9%	21.1%	21.3%	21.5%
Rated output (P <sub>mpp</sub> ) at NMOT	396.1 Wp	399.8 Wp	403.5 Wp	407.3 Wp	411.0 Wp
Rated voltage (V <sub>mpp</sub> ) at NMOT	38.61 V	38.77 V	38.92 V	39.08 V	39.24 V
Rated current (I <sub>mpp</sub> ) at NMOT	10.26 A	10.31 A	10.37 A	10.42 A	10.48 A
Open circuit voltage (V <sub>oc</sub> ) at NMOT	46.59 V	46.78 V	46.97 V	47.16 V	47.34 V
Short circuit current (I <sub>sc</sub> ) at NMOT	10.97 A	11.04 A	11.13 A	11.20 A	11.27 A
Temperature coefficient (P <sub>mpp</sub> )	- 0.35%/°C				
Temperature coefficient (I <sub>sc</sub> )	+ 0.045%/°C				
Temperature coefficient (V <sub>oc</sub> )	- 0.27%/°C				
Nominal module operating temperature (NMOT)	41±2°C				
Maximum system voltage (IEC/UL)	1500V <sub>DC</sub>				
Number of diodes	3				
Junction box IP rating	IP 68				
Maximum series fuse rating	25 A				

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5  
NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

### MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	2256 x 1133 x 35 mm
Frame technology	Aluminum, silver anodized
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 300 mm Landscape: 1400 mm
Cable diameter (IEC/UL)	4 mm <sup>2</sup> / 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)	HCB40 / MC4-EVO2 (optional)

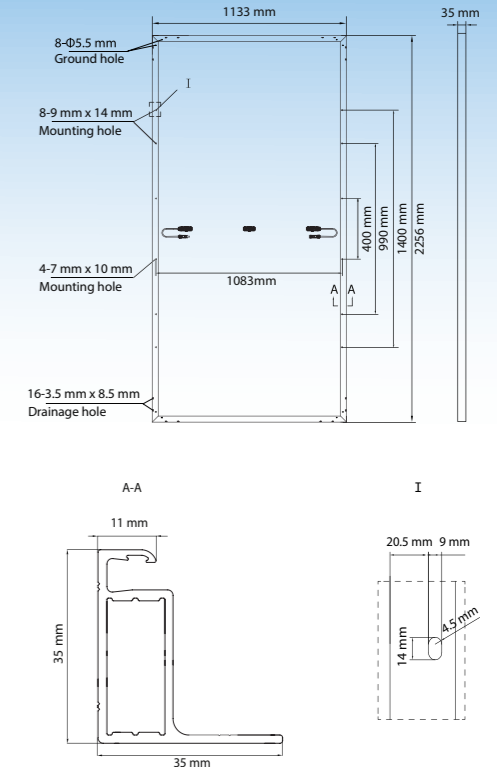
① Refer to Astronergy crystalline installation manual or contact technical department.  
Maximum Mechanical Test Load=1.5×Maximum Mechanical Design Load.

### PACKING SPECIFICATIONS

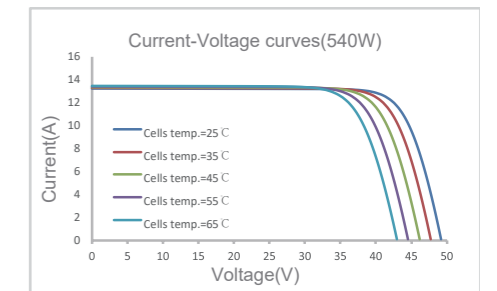
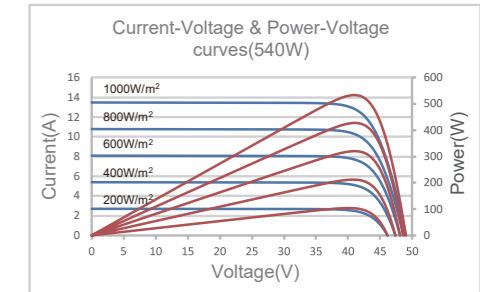
① Module Weight	27.2 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	882 kg
Number of modules per 40'HQ container	620 pcs

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

### MODULE DIMENSION DETAILS



### CURVE



# ASTRO 5 Twins

Create Sustainable and Efficient Green Energy



**ASTRONERGY**  
A CHINT COMPANY

## 525W~545W

Monocrystalline PV Module  
CHSM72M(DG)/F-BH Series (182)



### KEY FEATURES

**+5W**

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



**NON-DESTRUCTIVE CUTTING**  
Higher bending strength of cells and mechanical properties of modules.



**HIGH CUSTOMER VALUE**  
Up to 25% additional power gain, lower BOS cost and LCOE.



**INNOVATIONAL HALF-CUT&MULTI-BUSBAR TECHNOLOGY**  
Lower risk of microcrack, better shading tolerance, higher reliability.

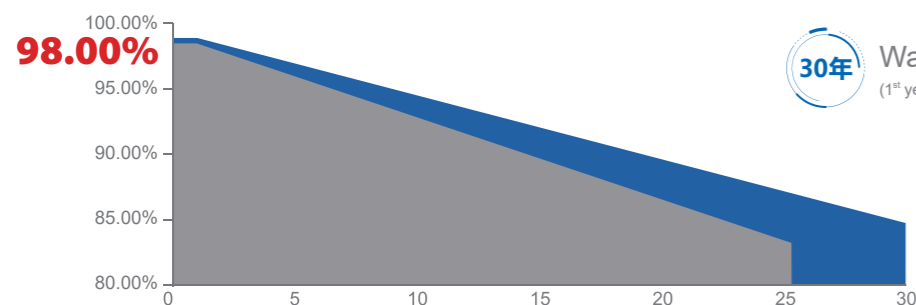


**SUPER PERC+ CELL TECHNOLOGY**  
Higher module power and module efficiency, lower power degradation.



**APPLICABLE FOR MULTI DIFFERENT ENVIRONMENTS**  
Wide range of applications, such as snow areas, high humidity areas and strong sandstorm areas, etc.

### WARRANTY



**12年** Warranty for Materials and Processing

**30年** Warranty for Extra Linear Power Output  
(1<sup>st</sup> year ≤ 2.0%, 2<sup>nd</sup>~30<sup>th</sup> years ≤ 0.45% / year)

For Global Market

### ELECTRICAL SPECIFICATIONS

Power rating (front)	525 Wp		530 Wp		535 Wp		540 Wp		545 Wp	
	Front	Back	Front	Back	Front	Back	Front	Back	Front	Back
Testing Condition										
STC rated output (P <sub>mpp</sub> /Wp)	525	368	530	371	535	375	540	378	545	382
Rated voltage (V <sub>mpp</sub> /V) at STC	41.43	41.48	41.60	41.65	41.76	41.81	41.93	41.98	42.10	42.15
Rated current (I <sub>mpp</sub> /A) at STC	12.67	8.87	12.74	8.92	12.81	8.97	12.88	9.01	12.95	9.06
Open circuit voltage (V <sub>oc</sub> /V) at STC	49.30	49.25	49.50	49.45	49.70	49.65	49.90	49.85	50.10	50.05
Short circuit current (I <sub>sc</sub> /A) at STC	13.40	9.27	13.48	9.33	13.57	9.39	13.66	9.45	13.75	9.52
Module efficiency	20.5%	14.4%	20.7%	14.5%	20.9%	14.7%	21.1%	14.8%	21.3%	14.9%
Temperature coefficient (P <sub>mpp</sub> )	- 0.35%/°C									
Temperature coefficient (I <sub>sc</sub> )	+ 0.045%/°C									
Temperature coefficient (V <sub>oc</sub> )	- 0.27%/°C									
Nominal module operating temperature (NMOT)	41±2°C									
Maximum system voltage (IEC/UL)	1500V <sub>DC</sub>									
Number of diodes	3									
Junction box IP rating	IP 68									
Maximum series fuse rating	30 A									

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5

### ELECTRICAL SPECIFICATIONS (Integrated power)

P <sub>mpp</sub> gain	P <sub>mpp</sub>	V <sub>mpp</sub>	I <sub>mpp</sub>	V <sub>oc</sub>	I <sub>sc</sub>
5%	562 Wp	41.76 V	13.45 A	49.70 V	14.25 A
10%	589 Wp	41.76 V	14.09 A	49.70 V	14.93 A
15%	615 Wp	41.77 V	14.73 A	49.71 V	15.61 A
20%	642 Wp	41.77 V	15.37 A	49.71 V	16.29 A
25%	669 Wp	41.78 V	16.01 A	49.72 V	16.96 A

Electrical characteristics with different rear power gain (reference to 535W)

### MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	2256 x 1133 x 35 mm
Frame technology	Aluminum, silver anodized
Front glass thickness	2.0 mm
Cable length (IEC/UL)	Portrait: 300 mm Landscape: 1400 mm
Cable diameter (IEC/UL)	4 mm <sup>2</sup> / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Connector type (IEC/UL)	HCB40 / MC4-EVO2 (optional)

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

### PACKING SPECIFICATIONS

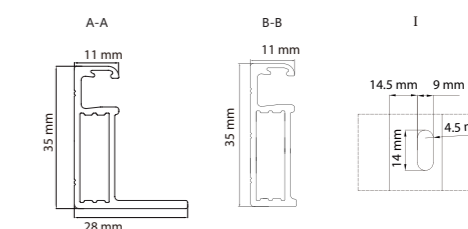
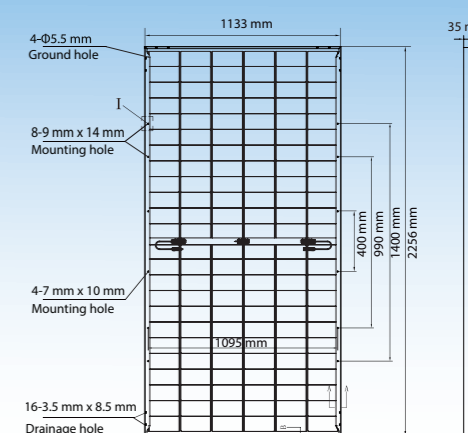
① Module Weight	32.3 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	1040 kg
Number of modules per 40'HQ container	620 pcs

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

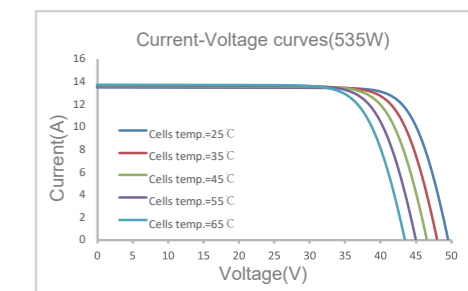
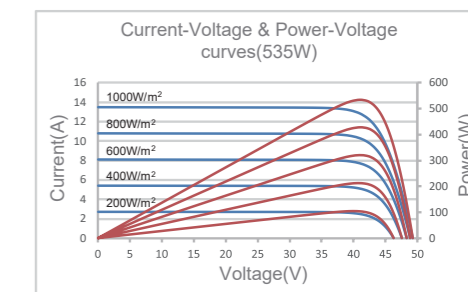
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http://energy.chint.com

### MODULE DIMENSION DETAILS



### CURVE



# ASTRO 5s

Create Sustainable and Efficient Green Energy



## 395W~410W

Monocrystalline PV Module  
CHSM54M-HC Series (182)



### KEY FEATURES

**+5W**

#### OUTPUT POSITIVE TOLERANCE

Guaranteed 0~+5W positive tolerance to ensure power output.



#### NON-DESTRUCTIVE CUTTING

Higher bending strength of cells and mechanical properties of modules.



#### INNOVATIONAL MULTI-BUSBAR TECHNOLOGY

Higher light absorption, lower risk of microcrack.



#### INNOVATIONAL HALF-CUT TECHNOLOGY

Better shading tolerance, higher reliability.



#### SUPER PERC+ CELL TECHNOLOGY

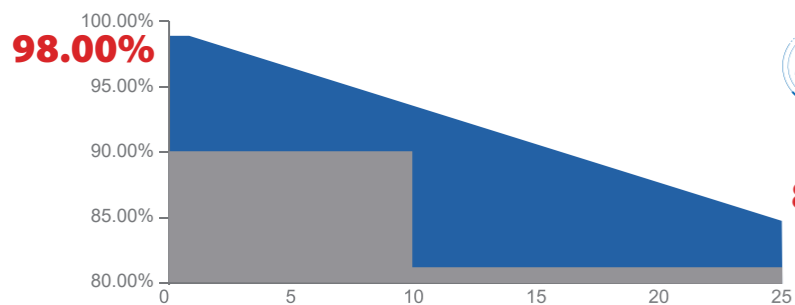
Higher module power and module efficiency, lower power degradation.



#### Anti PID PID RESISTANCE

Excellent PID resistance.

### WARRANTY



**12年** Warranty for Materials and Processing

**25年** Warranty for Extra Linear Power Output  
(1<sup>st</sup> year ≤ 2.0%, 2<sup>nd</sup>~25<sup>th</sup> years ≤ 0.55% / year)

**84.80%**

For Global Market

### ELECTRICAL SPECIFICATIONS

STC rated output (P <sub>mpp</sub> )	395 Wp	400 Wp	405 Wp	410 Wp
Rated voltage (V <sub>mpp</sub> ) at STC	30.92 V	31.09 V	31.26 V	31.43 V
Rated current (I <sub>mpp</sub> ) at STC	12.77 A	12.86 A	12.96 A	13.05 A
Open circuit voltage (V <sub>oc</sub> ) at STC	36.80 V	37.00 V	37.20 V	37.40 V
Short circuit current (I <sub>sc</sub> ) at STC	13.52 A	13.65 A	13.76 A	13.88 A
Module efficiency	20.4%	20.7%	20.9%	21.2%
Rated output (P <sub>mpp</sub> ) at NMOT	295.2 Wp	298.9 Wp	302.7 Wp	306.4 Wp
Rated voltage (V <sub>mpp</sub> ) at NMOT	28.82 V	28.98 V	29.13 V	29.29 V
Rated current (I <sub>mpp</sub> ) at NMOT	10.24 A	10.32 A	10.39 A	10.46 A
Open circuit voltage (V <sub>oc</sub> ) at NMOT	34.78 V	34.97 V	35.15 V	35.34 V
Short circuit current (I <sub>sc</sub> ) at NMOT	10.97 A	11.07 A	11.17 A	11.26 A
Temperature coefficient (P <sub>mpp</sub> )	- 0.35%/°C			
Temperature coefficient (I <sub>sc</sub> )	+ 0.045%/°C			
Temperature coefficient (V <sub>oc</sub> )	- 0.27%/°C			
Nominal module operating temperature (NMOT)	41±2°C			
Maximum system voltage (IEC/UL)	1500V <sub>DC</sub>			
Number of diodes	3			
Junction box IP rating	IP 68			
Maximum series fuse rating	25 A			

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5  
NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

### MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	1708 x 1133 x 30 mm
Frame technology	Aluminum, silver anodized
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 300 mm Landscape: 1200 mm
Cable diameter (IEC/UL)	4 mm <sup>2</sup> / 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)	HCB40 / MC4-EVO2 (optional)

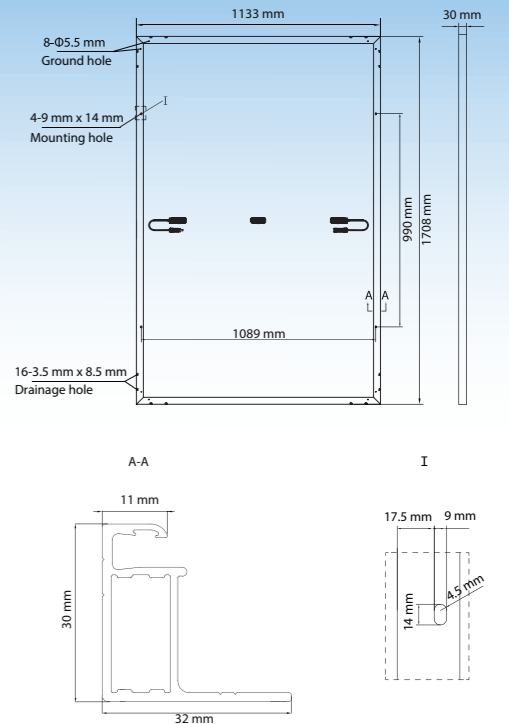
① Refer to Astronergy crystalline installation manual or contact technical department.  
Maximum Mechanical Test Load=1.5×Maximum Mechanical Design Load.

### PACKING SPECIFICATIONS

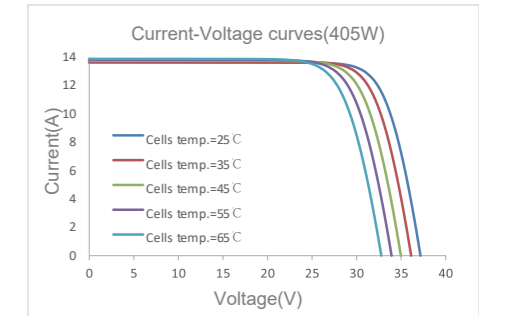
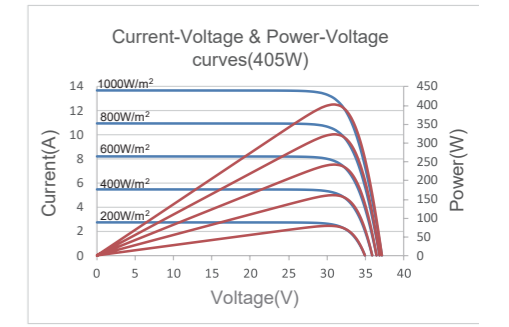
① Module Weight	21.5 kg
② Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	813 kg
Number of modules per 40'HQ container	936 pcs

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

### MODULE DIMENSION DETAILS



### CURVE



# ASTRO 5s

Create Sustainable and Efficient Green Energy



## 390W~405W

Monocrystalline PV Module  
CHSM54M(BL)-HC Series (182)



### KEY FEATURES

**+5W**

**OUTPUT POSITIVE TOLERANCE**

Guaranteed 0~+5W positive tolerance to ensure power output.

**NON-DESTRUCTIVE CUTTING**

Higher bending strength of cells and mechanical properties of modules.

**INNOVATIONAL MULTI-BUSBAR TECHNOLOGY**

Higher light absorption, lower risk of microcrack.

**INNOVATIONAL HALF-CUT TECHNOLOGY**

Better shading tolerance, higher reliability.

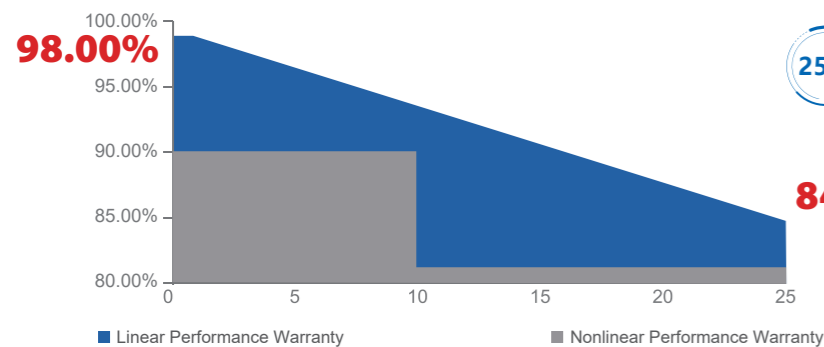
**THE-STATE-OF-THE-ART APPEARANCE**

Full black designed for a better aesthetic appearance and building integration.

**Anti PID**

**PID RESISTANCE**  
Excellent PID resistance.

### WARRANTY



- 12年** Warranty for Materials and Processing
- 25年** Warranty for Extra Linear Power Output (1<sup>st</sup> year ≤ 2.0%, 2<sup>nd</sup>~25<sup>th</sup> years ≤ 0.55% / year)

For Global Market

### ELECTRICAL SPECIFICATIONS

	390 Wp	395 Wp	400 Wp	405 Wp
STC rated output (P <sub>mpp</sub> )	390 Wp	395 Wp	400 Wp	405 Wp
Rated voltage (V <sub>mpp</sub> ) at STC	30.76 V	30.92 V	31.09 V	31.26 V
Rated current (I <sub>mpp</sub> ) at STC	12.68 A	12.77 A	12.86 A	12.96 A
Open circuit voltage (V <sub>oc</sub> ) at STC	36.60 V	36.80 V	37.00 V	37.20 V
Short circuit current (I <sub>sc</sub> ) at STC	13.40 A	13.52 A	13.65 A	13.76 A
Module efficiency	20.2%	20.4%	20.7%	20.9%
Rated output (P <sub>mpp</sub> ) at NMOT	291.5 Wp	295.2 Wp	298.9 Wp	302.7 Wp
Rated voltage (V <sub>mpp</sub> ) at NMOT	28.66 V	28.82 V	28.98 V	29.13 V
Rated current (I <sub>mpp</sub> ) at NMOT	10.17 A	10.24 A	10.32 A	10.39 A
Open circuit voltage (V <sub>oc</sub> ) at NMOT	34.59 V	34.78 V	34.97 V	35.15 V
Short circuit current (I <sub>sc</sub> ) at NMOT	10.87 A	10.97 A	11.07 A	11.17 A
Temperature coefficient (P <sub>mpp</sub> )	- 0.35%/°C			
Temperature coefficient (I <sub>sc</sub> )	+ 0.045%/°C			
Temperature coefficient (V <sub>oc</sub> )	- 0.27%/°C			
Nominal module operating temperature (NMOT)	41±2°C			
Maximum system voltage (IEC/UL)	1000V <sub>DC</sub>			
Number of diodes	3			
Junction box IP rating	IP 68			
Maximum series fuse rating	25 A			

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5  
NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

### MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	1708 x 1133 x 30 mm
Frame technology	Aluminum, black anodized
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 300 mm Landscape: 1200 mm
Cable diameter (IEC/UL)	4 mm <sup>2</sup> / 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)	HCB40 / MC4 (optional)

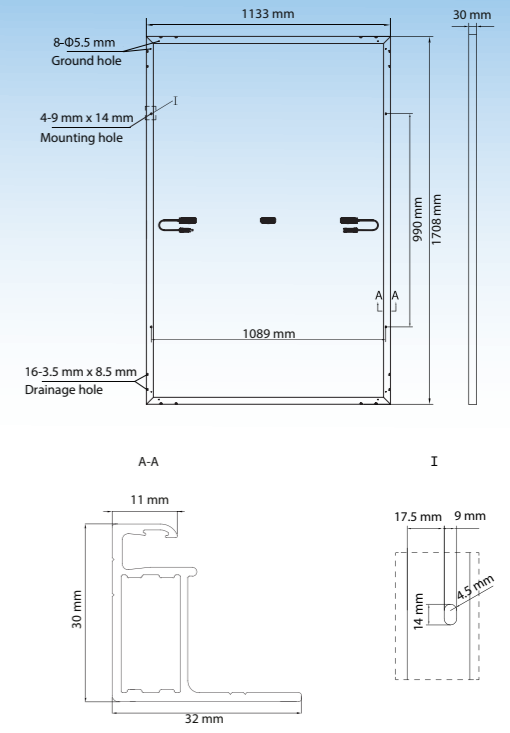
① Refer to Astronergy crystalline installation manual or contact technical department.  
Maximum Mechanical Test Load=1.5×Maximum Mechanical Design Load.

### PACKING SPECIFICATIONS

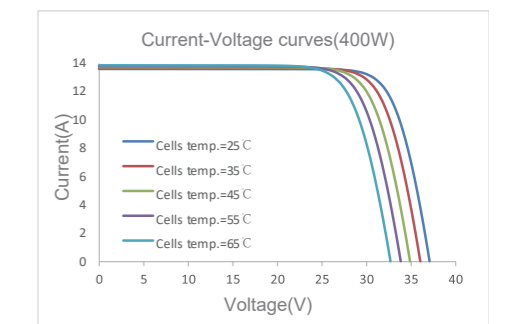
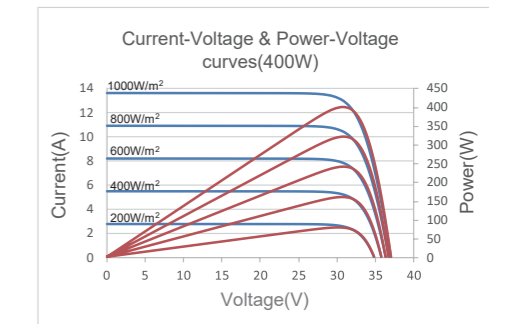
① Module Weight	21.5 kg
② Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	813 kg
Number of modules per 40'HQ container	936 pcs

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

### MODULE DIMENSION DETAILS



### CURVE



# ASTRO 4 Semi

Create Sustainable and Efficient Green Energy



## 445W~455W

Monocrystalline PV Module  
CHSM72M-HC Series (166)



### KEY FEATURES

**+5W**

#### OUTPUT POSITIVE TOLERANCE

Guaranteed 0~+5W positive tolerance to ensure power output.



#### INNOVATIONAL HALF-CUT TECHNOLOGY

Better shading tolerance, higher reliability.



#### INNOVATIONAL MULTI-BUSBAR TECHNOLOGY

Higher light absorption, lower risk of microcrack.



#### SUPER PERC+ CELL TECHNOLOGY

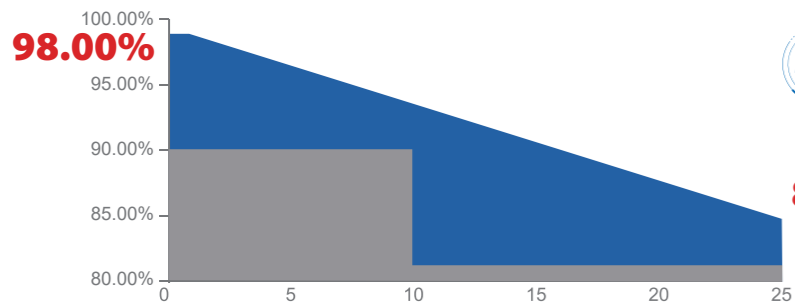
Higher module power and module efficiency, lower power degradation.

**Anti PID**

#### PID RESISTANCE

Excellent PID resistance.

### WARRANTY



**12年** Warranty for Materials and Processing

**25年** Warranty for Extra Linear Power Output  
(1<sup>st</sup> year ≤ 2.0%, 2<sup>nd</sup>~25<sup>th</sup> years ≤ 0.55% / year)

**84.80%**

For Global Market

### ELECTRICAL SPECIFICATIONS

STC rated output (P <sub>mpp</sub> )	445 Wp	450 Wp	455 Wp
Rated voltage (V <sub>mpp</sub> ) at STC	41.05 V	41.32 V	41.51 V
Rated current (I <sub>mpp</sub> ) at STC	10.84 A	10.89 A	10.96 A
Open circuit voltage (V <sub>oc</sub> ) at STC	48.80 V	49.05 V	49.35 V
Short circuit current (I <sub>sc</sub> ) at STC	11.30 A	11.37 A	11.44 A
Module efficiency	20.5%	20.7%	20.9%
Rated output (P <sub>mpp</sub> ) at NMOT	330.8 Wp	334.5 Wp	338.2 Wp
Rated voltage (V <sub>mpp</sub> ) at NMOT	38.12 V	38.37 V	38.55 V
Rated current (I <sub>mpp</sub> ) at NMOT	8.68 A	8.72 A	8.78 A
Open circuit voltage (V <sub>oc</sub> ) at NMOT	45.70 V	45.94 V	46.22 V
Short circuit current (I <sub>sc</sub> ) at NMOT	9.10 A	9.16 A	9.22 A
Temperature coefficient (P <sub>mpp</sub> )	- 0.35%/°C		
Temperature coefficient (I <sub>sc</sub> )	+ 0.050%/°C		
Temperature coefficient (V <sub>oc</sub> )	- 0.27%/°C		
Nominal module operating temperature (NMOT)	41±2°C		
Maximum system voltage (IEC/UL)	1500V <sub>DC</sub>		
Number of diodes	3		
Junction box IP rating	IP 68		
Maximum series fuse rating	20 A		

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5  
NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

### MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	2094 x 1038 x 35 mm
Frame technology	Aluminum, silver anodized
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 300 mm Landscape: 1300 mm
Cable diameter (IEC/UL)	4 mm <sup>2</sup> / 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)	HCB40 / MC4-EVO2 (optional)

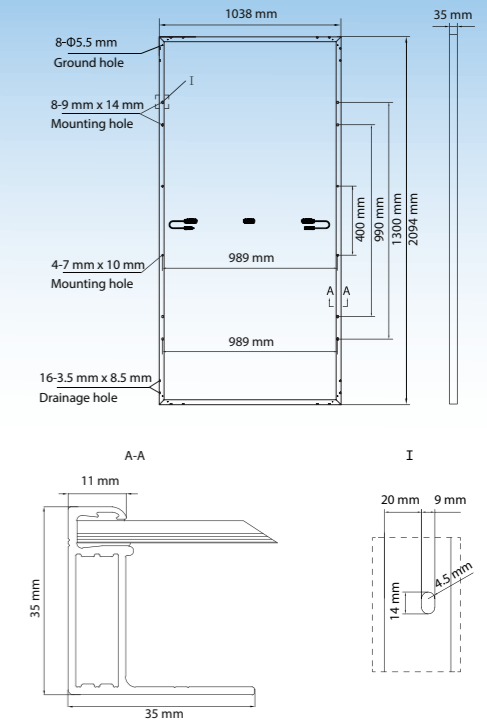
① Refer to Astronergy crystalline installation manual or contact technical department.  
Maximum Mechanical Test Load=1.5×Maximum Mechanical Design Load.

### PACKING SPECIFICATIONS

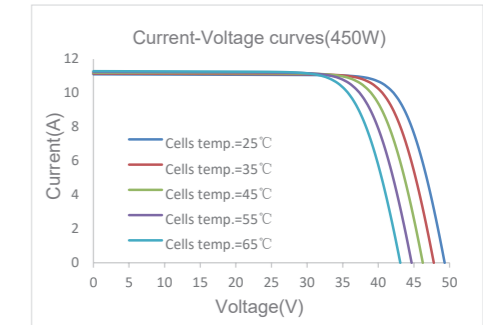
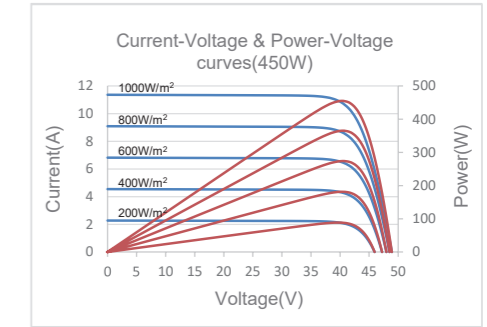
① Module Weight	23.5 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	769 kg
Number of modules per 40'HQ container	682 pcs

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

### MODULE DIMENSION DETAILS



### CURVE



# ASTRO 4 Semi

Create Sustainable and Efficient Green Energy



## 370W~380W

Monocrystalline PV Module  
CHSM60M-HC Series (166)



### KEY FEATURES

**+5W**

#### OUTPUT POSITIVE TOLERANCE

Guaranteed 0~+5W positive tolerance to ensure power output.



#### INNOVATIONAL HALF-CUT TECHNOLOGY

Better shading tolerance, higher reliability.



#### INNOVATIONAL MULTI-BUSBAR TECHNOLOGY

Higher light absorption, lower risk of microcrack.



#### SUPER PERC+ CELL TECHNOLOGY

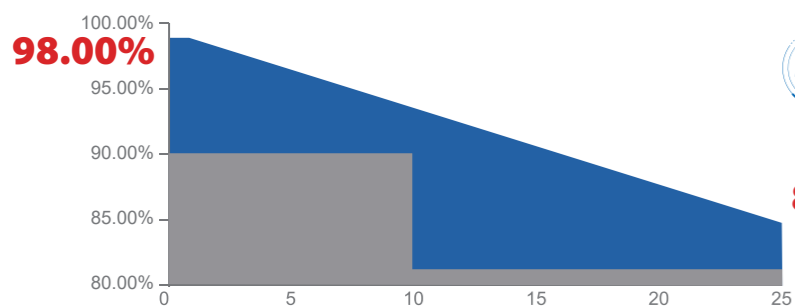
Higher module power and module efficiency, lower power degradation.

**Anti PID**

#### PID RESISTANCE

Excellent PID resistance.

### WARRANTY



**12年** Warranty for Materials and Processing

**25年** Warranty for Extra Linear Power Output  
(1<sup>st</sup> year ≤ 2.0%, 2<sup>nd</sup>~25<sup>th</sup> years ≤ 0.55% / year)

**84.80%**

For Global Market

### ELECTRICAL SPECIFICATIONS

STC rated output (P <sub>mpp</sub> )	370 Wp	375 Wp	380 Wp
Rated voltage (V <sub>mpp</sub> ) at STC	33.98 V	34.28 V	34.51 V
Rated current (I <sub>mpp</sub> ) at STC	10.89 A	10.94 A	11.01 A
Open circuit voltage (V <sub>oc</sub> ) at STC	40.75 V	41.05 V	41.34 V
Short circuit current (I <sub>sc</sub> ) at STC	11.35 A	11.42 A	11.49 A
Module efficiency	20.3%	20.6%	20.9%
Rated output (P <sub>mpp</sub> ) at NMOT	275.9 Wp	279.6 Wp	283.4 Wp
Rated voltage (V <sub>mpp</sub> ) at NMOT	31.68 V	31.96 V	32.18 V
Rated current (I <sub>mpp</sub> ) at NMOT	8.71 A	8.75 A	8.81 A
Open circuit voltage (V <sub>oc</sub> ) at NMOT	38.31 V	38.59 V	38.87 V
Short circuit current (I <sub>sc</sub> ) at NMOT	9.13 A	9.19 A	9.24 A
Temperature coefficient (P <sub>mpp</sub> )	- 0.35%/°C		
Temperature coefficient (I <sub>sc</sub> )	+ 0.050%/°C		
Temperature coefficient (V <sub>oc</sub> )	- 0.27%/°C		
Nominal module operating temperature (NMOT)	41±2°C		
Maximum system voltage (IEC/UL)	1500V <sub>DC</sub>		
Number of diodes	3		
Junction box IP rating	IP 68		
Maximum series fuse rating	20 A		

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5  
NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

### MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	1755 x 1038 x 35 mm
Frame technology	Aluminum, silver anodized
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 300 mm Landscape: 1200 mm
Cable diameter (IEC/UL)	4 mm <sup>2</sup> / 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)	HCB40 / MC4-EVO2 (optional)

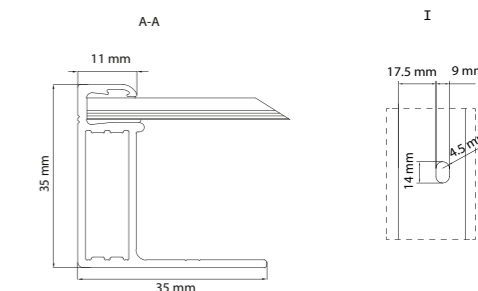
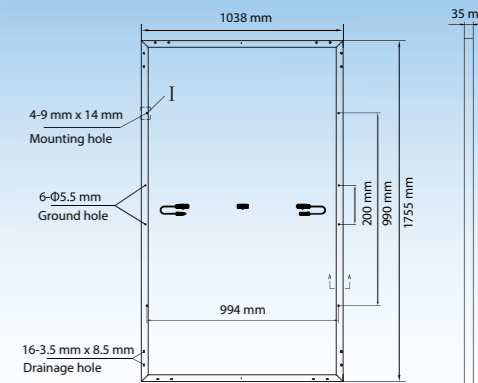
① Refer to Astronergy crystalline installation manual or contact technical department.  
Maximum Mechanical Test Load=1.5×Maximum Mechanical Design Load.

### PACKING SPECIFICATIONS

① Module Weight	19.8 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	647 kg
Number of modules per 40'HQ container	806 pcs

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

### MODULE DIMENSION DETAILS





# ASTRO 4 Semi

Create Sustainable and Efficient Green Energy



## 360W~375W

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



### KEY FEATURES

**+5W**

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

**INNOVATIONAL HALF-CUT TECHNOLOGY**

Better shading tolerance, higher reliability.

**INNOVATIONAL MULTI-BUSBAR TECHNOLOGY**

Higher light absorption, lower risk of microcrack.

**SUPER PERC+ CELL TECHNOLOGY**

Higher module power and module efficiency, lower power degradation.

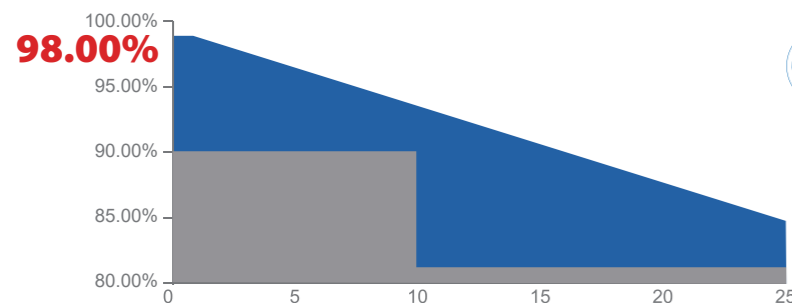
**THE-STATE-OF-THE-ART APPEARANCE**

Full black designed for a better aesthetic appearance and building integration.

**Anti PID**

**PID RESISTANCE**  
Excellent PID resistance.

### WARRANTY



**12年** Warranty for Materials and Processing

**25年** Warranty for Extra Linear Power Output  
(1<sup>st</sup> year ≤ 2.0%, 2<sup>nd</sup>~25<sup>th</sup> years ≤ 0.55% / year)

**84.80%**

For Global Market

### ELECTRICAL SPECIFICATIONS

STC rated output (P <sub>mpp</sub> )	360 Wp	365 Wp	370 Wp	375 Wp
Rated voltage (V <sub>mpp</sub> ) at STC	33.49 V	33.73 V	33.98 V	34.28 V
Rated current (I <sub>mpp</sub> ) at STC	10.75 A	10.82 A	10.89 A	10.94 A
Open circuit voltage (V <sub>oc</sub> ) at STC	40.14 V	40.41 V	40.75 V	41.05 V
Short circuit current (I <sub>sc</sub> ) at STC	11.21 A	11.29 A	11.35 A	11.42 A
Module efficiency	19.8%	20.0%	20.3%	20.6%
Rated output (P <sub>mpp</sub> ) at NMOT	268.5 Wp	272.2 Wp	275.9 Wp	279.6 Wp
Rated voltage (V <sub>mpp</sub> ) at NMOT	31.22 V	31.45 V	31.68 V	31.96 V
Rated current (I <sub>mpp</sub> ) at NMOT	8.60 A	8.65 A	8.71 A	8.75 A
Open circuit voltage (V <sub>oc</sub> ) at NMOT	37.74 V	37.99 V	38.31 V	38.59 V
Short circuit current (I <sub>sc</sub> ) at NMOT	9.02 A	9.08 A	9.13 A	9.19 A
Temperature coefficient (P <sub>mpp</sub> )	- 0.35%/°C			
Temperature coefficient (I <sub>sc</sub> )	+ 0.050%/°C			
Temperature coefficient (V <sub>oc</sub> )	- 0.27%/°C			
Nominal module operating temperature (NMOT)	41±2°C			
Maximum system voltage (IEC/UL)	1000V <sub>DC</sub>			
Number of diodes	3			
Junction box IP rating	IP 68			
Maximum series fuse rating	20 A			

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5  
NMOT: Irradiance 800W/m<sup>2</sup>, Ambient Temperature 20°C, AM=1.5, Wind Speed 1m/s

### MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	1755 x 1038 x 35 mm
Frame technology	Aluminum, black anodized
Front glass thickness	3.2 mm
Cable length (IEC/UL)	Portrait: 300 mm Landscape: 1200 mm
Cable diameter (IEC/UL)	4 mm <sup>2</sup> / 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)	HCB40 / MC4 (optional)

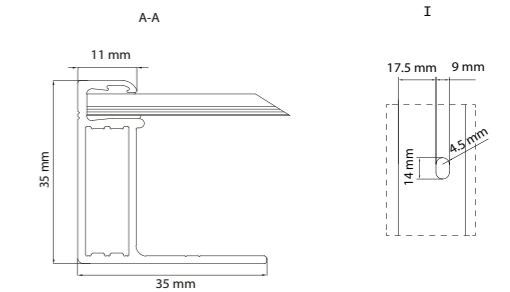
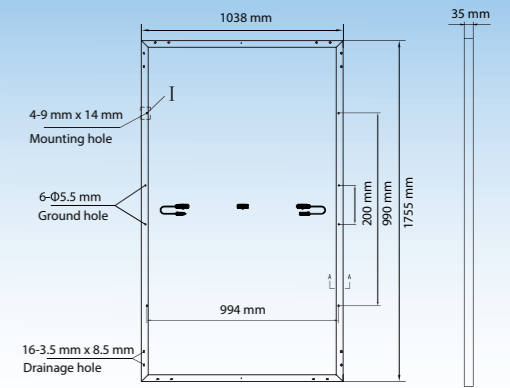
① Refer to Astronergy crystalline installation manual or contact technical department.  
Maximum Mechanical Test Load=1.5×Maximum Mechanical Design Load.

### PACKING SPECIFICATIONS

① Module Weight	19.8 kg
② Packing unit	31 pcs / box
Weight of packing unit (for 40'HQ container)	647 kg
Number of modules per 40'HQ container	806 pcs

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

### MODULE DIMENSION DETAILS



# ASTRO 4 Twins

Create Sustainable and Efficient Green Energy



**ASTRONERGY**  
A CHINT COMPANY

## 435W~450W

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



**+5W**

### OUTPUT POSITIVE TOLERANCE

Guaranteed 0~+5W positive tolerance to ensure power output.



### INNOVATIONAL HALF-CUT TECHNOLOGY

Better shading tolerance, higher reliability.



### INNOVATIONAL MULTI-BUSBAR TECHNOLOGY

Higher light absorption, lower risk of microcrack.



### SUPER PERC+ CELL TECHNOLOGY

Higher module power and module efficiency, lower power degradation.



### BIFACIAL POWER

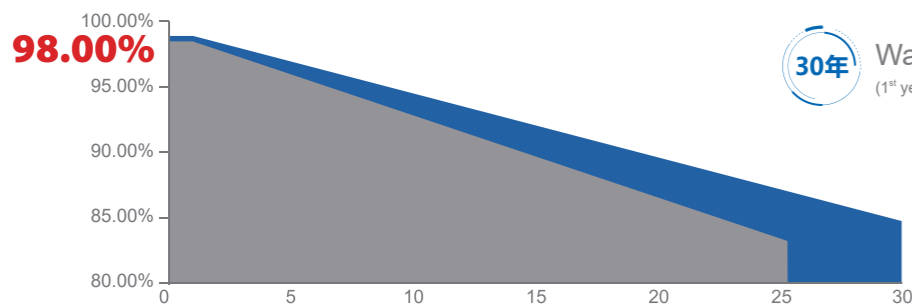
Up to 25% additional power gain from rear side.



### APPLICABLE FOR MULTI DIFFERENT ENVIRONMENTS

Wide range of applications, such as snow areas, high humidity areas and strong sandstorm areas, etc.

## WARRANTY



■ Double glass Product Linear Performance Warranty ■ Regular Product Linear Performance Warranty

**12年** Warranty for Materials and Processing

**30年** Warranty for Extra Linear Power Output  
(1<sup>st</sup> year ≤ 2.0%, 2<sup>nd</sup>~30<sup>th</sup> years ≤ 0.45% / year)

**84.95%**

For Global Market

## ELECTRICAL SPECIFICATIONS

Power rating (front)	435 Wp		440 Wp		445 Wp		450 Wp	
	Front	Back	Front	Back	Front	Back	Front	Back
Testing Condition	Front	Back	Front	Back	Front	Back	Front	Back
STC rated output (P <sub>mpp</sub> /Wp)	435	304	440	308	445	311	450	315
Rated voltage (V <sub>mpp</sub> /V) at STC	40.85	41.64	41.12	41.85	41.36	42.03	41.59	42.28
Rated current (I <sub>mpp</sub> /A) at STC	10.65	7.30	10.70	7.36	10.76	7.40	10.82	7.45
Open circuit voltage (V <sub>oc</sub> /V) at STC	48.90	47.56	49.11	47.83	49.44	47.99	49.78	48.25
Short circuit current (I <sub>sc</sub> /A) at STC	11.12	7.99	11.20	8.05	11.25	8.10	11.3	8.16
Module efficiency	20.0%	14.0%	20.2%	14.2%	20.5%	14.3%	20.7%	14.5%
Temperature coefficient (P <sub>mpp</sub> )	- 0.35%/°C							
Temperature coefficient (I <sub>sc</sub> )	+ 0.050%/°C							
Temperature coefficient (V <sub>oc</sub> )	- 0.27%/°C							
Nominal module operating temperature (NMOT)	41±2° C							
Maximum system voltage (IEC/UL)	1500V <sub>DC</sub>							
Number of diodes	3							
Junction box IP rating	IP 68							
Maximum series fuse rating	20 A							

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5

## ELECTRICAL SPECIFICATIONS (Integrated power)

P <sub>mpp</sub> gain	P <sub>mpp</sub>	V <sub>mpp</sub>	I <sub>mpp</sub>	V <sub>oc</sub>	I <sub>sc</sub>
5%	467 Wp	41.36 V	11.29 A	49.44 V	11.73 A
10%	489 Wp	41.36 V	11.82 A	49.44 V	12.29 A
15%	511 Wp	41.36 V	12.35 A	49.44 V	12.84 A
20%	534 Wp	41.26 V	12.94 A	49.54 V	13.39 A
25%	556 Wp	41.26 V	13.48 A	49.54 V	13.94 A

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

## MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	2094 x 1038 x 30 mm
Frame technology	Aluminum, silver anodized
Front glass thickness	2.0 mm
Cable length (IEC/UL)	Portrait: 300 mm Landscape: 1300 mm
Cable diameter (IEC/UL)	4 mm <sup>2</sup> / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Connector type (IEC/UL)	HCB40 / MC4-EVO2 (optional)

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

## PACKING SPECIFICATIONS

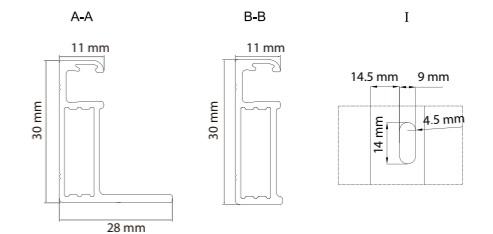
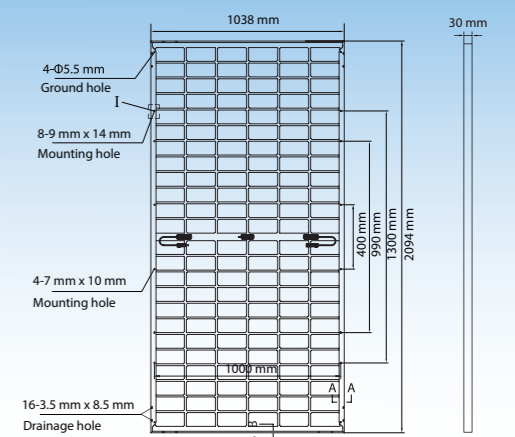
① Module Weight	27.5 kg
② Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	1038 kg
Number of modules per 40'HQ container	792 pcs

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

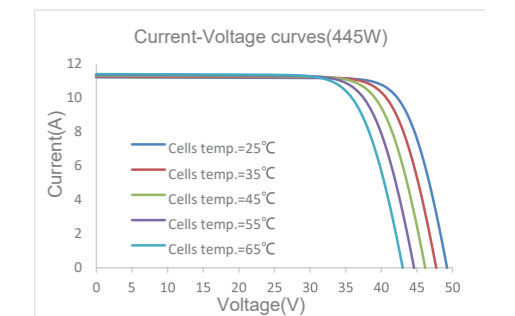
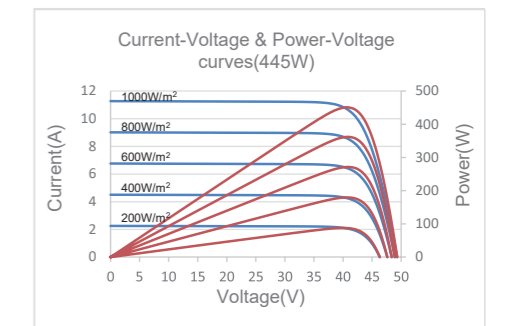
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## MODULE DIMENSION DETAILS



## CURVE



# ASTRO 4 Twins

Create Sustainable and Efficient Green Energy



**ASTRONERGY**  
A CHNT COMPANY

## 365W~380W

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



**+5W**

### OUTPUT POSITIVE TOLERANCE

Guaranteed 0~+5W positive tolerance to ensure power output.



### INNOVATIONAL HALF-CUT TECHNOLOGY

Better shading tolerance, higher reliability.



### INNOVATIONAL MULTI-BUSBAR TECHNOLOGY

Higher light absorption, lower risk of microcrack.



### SUPER PERC+ CELL TECHNOLOGY

Higher module power and module efficiency, lower power degradation.



### BIFACIAL POWER

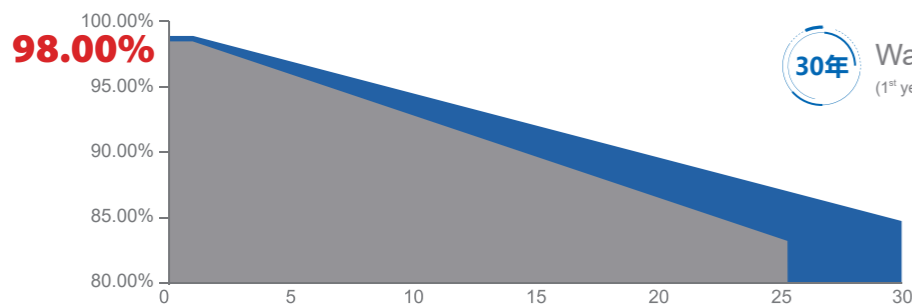
Up to 25% additional power gain from rear side.



### APPLICABLE FOR MULTI DIFFERENT ENVIRONMENTS

Wide range of applications, such as snow areas, high humidity areas and strong sandstorm areas, etc.

## WARRANTY



**12年** Warranty for Materials and Processing

**30年** Warranty for Extra Linear Power Output  
(1<sup>st</sup> year ≤ 2.0%, 2<sup>nd</sup>~30<sup>th</sup> years ≤ 0.45% / year)

For Global Market

## ELECTRICAL SPECIFICATIONS

Power rating (front)	365 Wp		370 Wp		375 Wp		380 Wp	
	Front	Back	Front	Back	Front	Back	Front	Back
Testing Condition	Front	Back	Front	Back	Front	Back	Front	Back
STC rated output (P <sub>mpp</sub> /Wp)	365	255	370	259	375	262	380	266
Rated voltage (V <sub>mpp</sub> /V) at STC	34.11	34.65	34.39	35.00	34.66	35.17	34.93	35.42
Rated current (I <sub>mpp</sub> /A) at STC	10.70	7.36	10.76	7.40	10.82	7.45	10.88	7.51
Open circuit voltage (V <sub>oc</sub> /V) at STC	40.74	39.60	41.11	39.97	41.48	40.13	41.81	40.45
Short circuit current (I <sub>sc</sub> /A) at STC	11.20	8.05	11.25	8.10	11.3	8.16	11.36	8.22
Module efficiency	20.0%	14.0%	20.3%	14.2%	20.6%	14.4%	20.9%	14.6%
Temperature coefficient (P <sub>mpp</sub> )	- 0.35%/°C							
Temperature coefficient (I <sub>sc</sub> )	+ 0.050%/°C							
Temperature coefficient (V <sub>oc</sub> )	- 0.27%/°C							
Nominal module operating temperature (NMOT)	41±2° C							
Maximum system voltage (IEC/UL)	1500V <sub>DC</sub>							
Number of diodes	3							
Junction box IP rating	IP 68							
Maximum series fuse rating	20 A							

STC: Irradiance 1000W/m<sup>2</sup>, Cell Temperature 25°C, AM=1.5

## ELECTRICAL SPECIFICATIONS (Integrated power)

P <sub>mpp</sub> gain	P <sub>mpp</sub>	V <sub>mpp</sub>	I <sub>mpp</sub>	V <sub>oc</sub>	I <sub>sc</sub>
5%	393 Wp	34.66 V	11.34 A	41.48 V	11.77 A
10%	412 Wp	34.66 V	11.89 A	41.48 V	12.34 A
15%	431 Wp	34.66 V	12.44 A	41.48 V	12.91 A
20%	450 Wp	34.56 V	13.02 A	41.58 V	13.44 A
25%	468 Wp	34.56 V	13.54 A	41.58 V	13.98 A

Electrical characteristics with different rear power gain (reference to 375W)

## MECHANICAL SPECIFICATIONS

Outer dimensions (L x W x H)	1755 x 1038 x 30 mm
Frame technology	Aluminum, silver anodized
Front glass thickness	2.0 mm
Cable length (IEC/UL)	Portrait: 300 mm Landscape: 1200 mm
Cable diameter (IEC/UL)	4 mm <sup>2</sup> / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Connector type (IEC/UL)	HCB40 / MC4-EVO2 (optional)

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

## PACKING SPECIFICATIONS

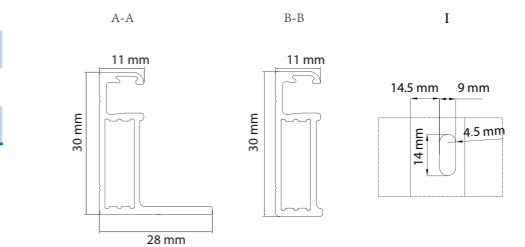
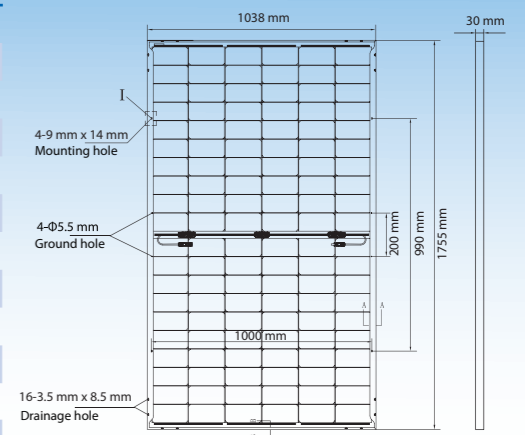
① Module Weight	23.0 kg
② Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	873 kg
Number of modules per 40'HQ container	936 pcs

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

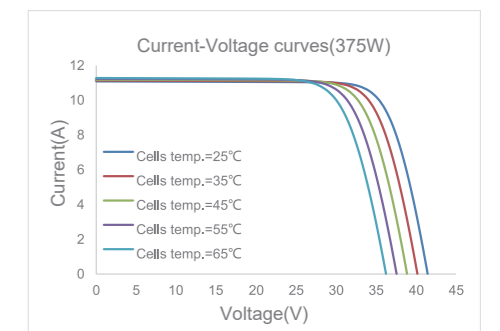
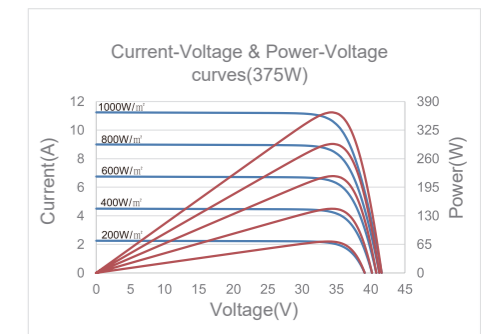
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## MODULE DIMENSION DETAILS



## CURVE



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



**ASTRONERGY**  
A CHINT COMPANY

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Astronergy Solar Turkey anonim şirketi

