



**ASTRONERGY**

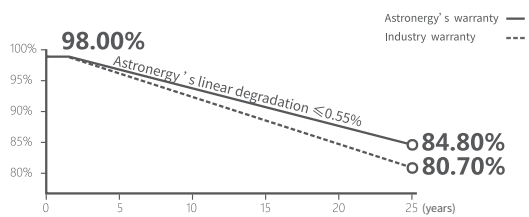


**ASTRO 5** Semi  
CHSM60M-HC  
Monofacial Series(182)

**440~460W**

**Warranty**

-  25-year Product Warranty (special for rooftop market)
-  25-year Linear Power Warranty



**Key Features**

- PERC+ / Half-cut
- Non-destructive cutting
- Low BOS cost & LCOE



ISO 9001:2015:ISO Quality Management System  
ISO 14001:2015:ISO Environment Management System  
ISO 45001:Occupational Health and Safety



Tier 1  
BloombergNEF



**440~460W**

POWER RANGE

**0~+5W**

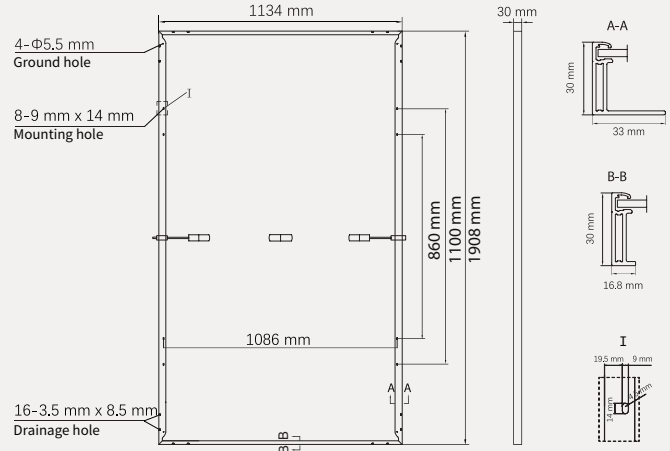
POWER SORTING

**21.3%**MAX MODULE  
EFFICIENCY**≤ 1.0%**FIRST YEAR  
POWER DEGRADATION**≤ 0.4%**YEAR 2-30  
POWER DEGRADATION

## Mechanical Specifications

Outer dimensions (L x W x H)	1908 x 1134 x 30 mm
Cell type	P type mono-crystalline
No. of cells	120 (6*20)
Frame technology	Aluminum, black or silver anodized
Front glass thickness	3.2 mm
Cable length (Including connector)	Portrait: (+)350 mm, (-)250 mm; Customized length
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)	PV-HCB40 (Astronergy) or PV-KST4-EVO2A/ xy, PV-KBT4-EVO2A/xy (Stäubli)
Module weight	23.9 kg
Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	905 kg
Modules per 40' HQ container	864 pcs (Subject to sales contract)

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



## Electrical Specifications CHSM60M-HC-XXX(XXX=440-460)

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

	440	445	450	455	460
Rated output (Pmpp / Wp)	440	445	450	455	460
Rated voltage (Vmpp / V)	34.50	34.66	34.83	35.00	35.17
Rated current (Impp / A)	12.76	12.84	12.92	13.00	13.08
Open circuit voltage (Voc / V)	41.05	41.25	41.45	41.65	41.85
Short circuit current (Isc / A)	13.48	13.59	13.71	13.81	13.91
Module efficiency	20.3%	20.6%	20.8%	21.0%	21.3%

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

	440	445	450	455	460
Rated output (Pmpp / Wp)	328.8	332.6	336.3	340.0	343.8
Rated voltage (Vmpp / V)	32.15	32.31	32.46	32.62	32.78
Rated current (Impp / A)	10.23	10.29	10.36	10.42	10.49
Open circuit voltage (Voc / V)	38.79	38.98	39.17	39.36	39.55
Short circuit current (Isc / A)	10.94	11.02	11.12	11.20	11.29

Power Sorting: 0~+5W Power tolerance: +/- 3%

## Temperature Ratings (STC) Operating Parameters

Temperature coefficient (Pmpp)	-0.34%/°C	No. of diodes	3
Temperature coefficient (Isc)	+0.04%/°C	Junction box IP rating	IP 68
Temperature coefficient (Voc)	-0.25%/°C	Max. series fuse rating	25 A
Nominal module operating temperature (NMOT)	41±2°C	Max. system voltage (IEC/UL)	1500V <sub>DC</sub>

Fire performance: Class C

Made in China, Made in Thailand.

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<http://www.astronergy.com.au>

## Curve

