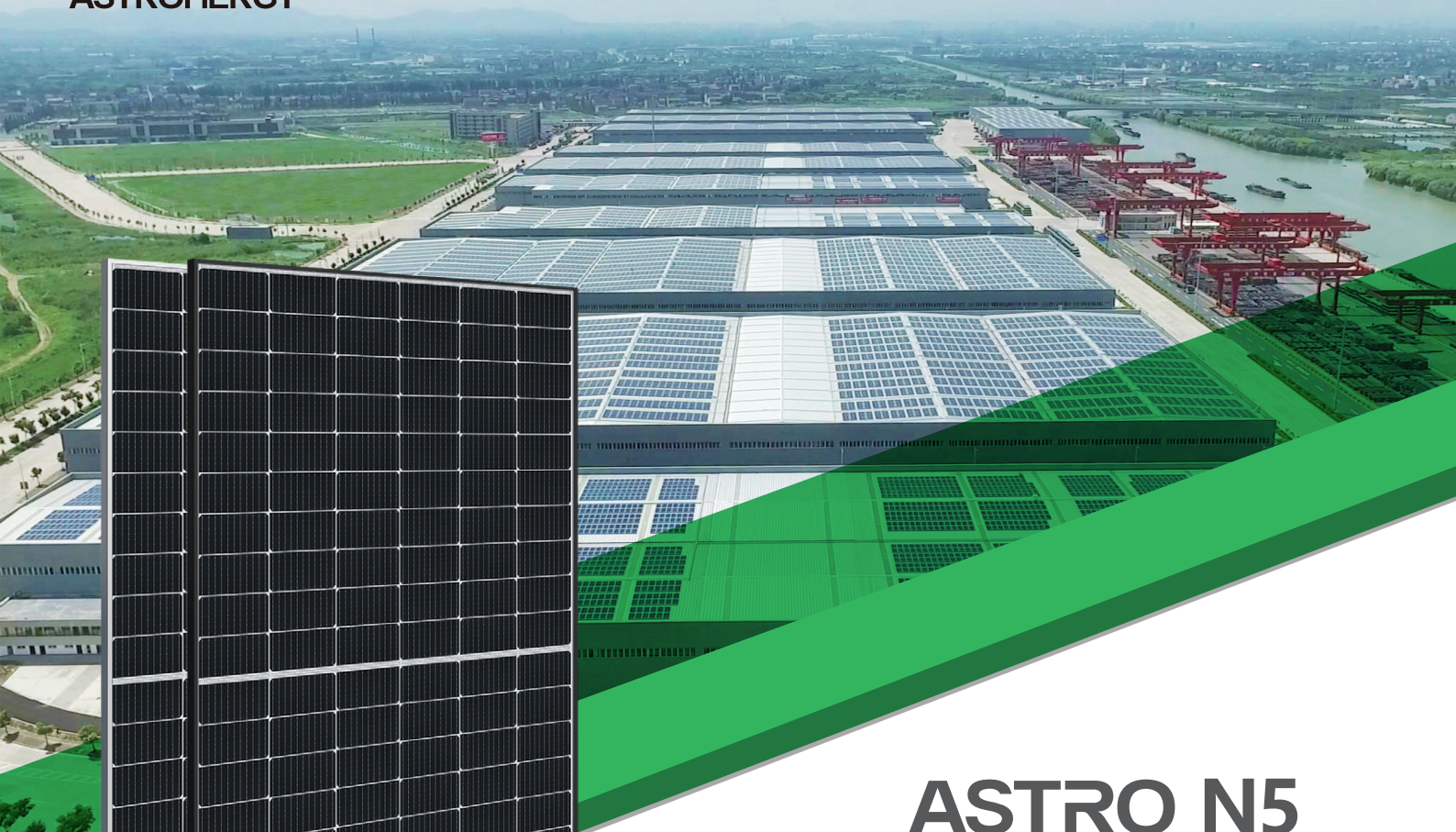




**ASTRONERGY**



# ASTRO N5

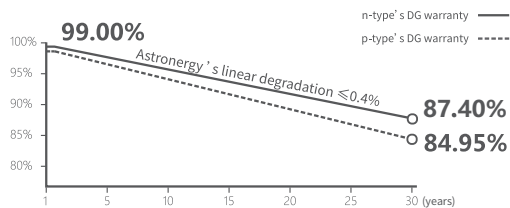
CHSM60N(DG)/F-HC  
Monofacial Series(182)

# 460~480W

## Warranty

**30** 30-year Product Warranty  
(special for rooftop market)

**30** 30-year Linear Power Warranty



## Key Features

- TOPCon / Half-cut
- Better temperature coefficient (Pmpp)
- Non-destructive cutting



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



Tier 1  
BloombergNEF



**460~480W**

POWER RANGE

**0~+5W**

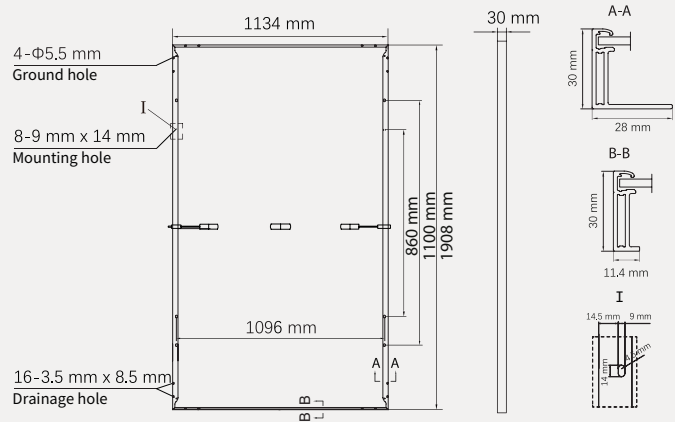
POWER SORTING

**22.2%**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	n-type mono-crystalline
No. of cells	120 (6*20)
Frame technology	Aluminum, black or silver anodized
Front glass thickness	1.6+1.6 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 kg
Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	874 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 CHSM60N(DG)/F-HC-XXX(XXX=460-480)

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

	460	465	470	475	480
Rated output (P <sub>mpp</sub> / W <sub>p</sub> )	460	465	470	475	480
Rated voltage (V <sub>mpp</sub> / V)	36.02	36.14	36.27	36.39	36.52
Rated current (I <sub>mp</sub> / A)	12.77	12.87	12.96	13.05	13.14
Open circuit voltage (V <sub>oc</sub> / V)	42.86	43.01	43.16	43.31	43.46
Short circuit current (I <sub>sc</sub> / A)	13.45	13.57	13.68	13.80	13.91
Module efficiency	21.3%	21.5%	21.7%	22.0%	22.2%

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

	349.7	353.4	357.2	361.0	361.0
Rated output (P <sub>mpp</sub> / W <sub>p</sub> )	349.7	353.4	357.2	361.0	361.0
Rated voltage (V <sub>mpp</sub> / V)	34.02	34.14	34.26	34.37	34.37
Rated current (I <sub>mp</sub> / A)	10.28	10.35	10.43	10.50	10.50
Open circuit voltage (V <sub>oc</sub> / V)	40.85	40.99	41.14	41.28	41.28
Short circuit current (I <sub>sc</sub> / A)	10.95	11.04	11.14	11.23	11.23

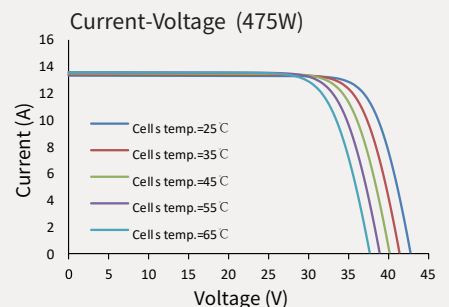
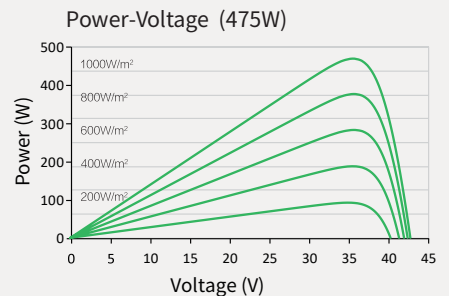
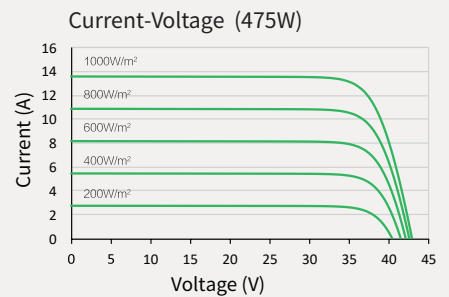
Power Sorting: 0~+5W Power tolerance: +/- 3.5%

## Temperature Ratings (STC) Operating Parameters

Temperature coefficient (P <sub>mpp</sub> )	-0.29%/°C	No. of diodes	3
Temperature coefficient (I <sub>sc</sub> )	+0.043%/°C	Junction box IP rating	IP 68
Temperature coefficient (V <sub>oc</sub> )	-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 A

## Curve



Made in China, Made in Thailand.

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

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