



ASTRONERGY

# ASTRO N5

CHSM60N(DG)/F-HC  
Monofacial Series

## 475~490W

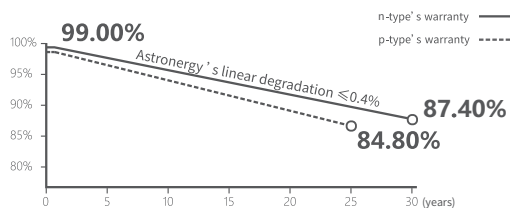
### Warranty

15  
25

15-year Product Warranty  
25-year Product Warranty  
(Optional, special for rooftop market)

30

30-year Linear Power Warranty



### Key Features

- TOPCon / Half-cut
- Low temperature coefficient (Pmpp)
- Non-destructive cutting
- PID resistance



ISO 9001:2015:ISO Quality Management System  
ISO 14001:2015:ISO Environment Management System  
ISO 45001:Occupational Health and Safety  
The first solar company which passed the Nord IEC/TS 62941 certification audit



Tier 1  
BloombergNEF



# 475~490W

POWER RANGE

# 0~+3%

POWER SORTING

# 22.6%

MAX MODULE  
EFFICIENCY

# ≤ 1.0%

FIRST YEAR  
POWER DEGRADATION

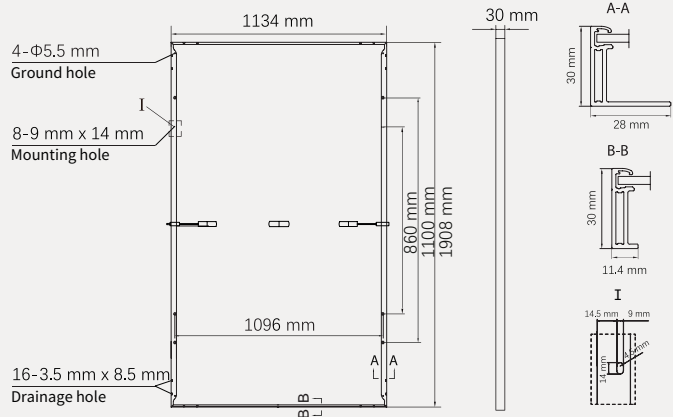
# ≤ 0.4%

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 / Back glass	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)	HCB40 / MC4-EVO2A (optional)
Module weight	23 kg
Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	874kg
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

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

Rated output (Pmpp / Wp)	475	480	485	490
Rated voltage (Vmpp / V)	36.39	36.52	36.65	36.77
Rated current (Impp / A)	13.05	13.14	13.23	13.33
Open circuit voltage (Voc / V)	43.31	43.46	43.61	43.76
Short circuit current (Isc / A)	13.80	13.91	14.02	14.12
Module efficiency	22.0%	22.2%	22.4%	22.6%

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

Rated output (Pmpp / Wp)	357.2	361.0	364.7	368.5
Rated voltage (Vmpp / V)	34.26	34.37	34.49	34.61
Rated current (Impp / A)	10.43	10.50	10.57	10.65
Open circuit voltage (Voc / V)	41.14	41.28	41.42	41.56
Short circuit current (Isc / A)	11.14	11.23	11.32	11.40

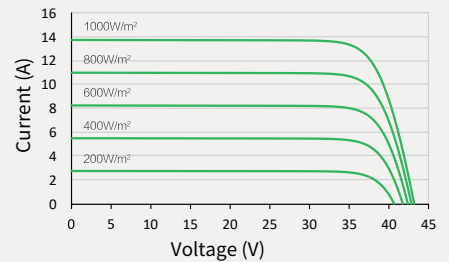
## Temperature Ratings (STC)

Temperature coefficient (Pmpp)	-0.29%/°C	No. of diodes	3
Temperature coefficient (Isc)	+0.043%/°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>

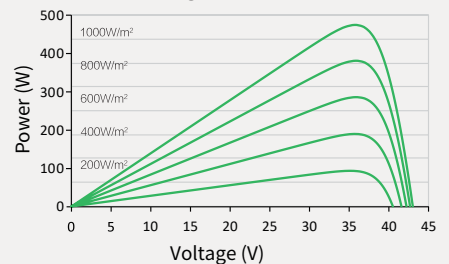
## Operating Parameters

## Curve

Current-Voltage (480W)



Power-Voltage (480W)



Current-Voltage (480W)

