



ASTRONERGY

Special for Australian Market

(preliminary)

# ASTRO N5

Create Sustainable and Efficient Green Energy

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

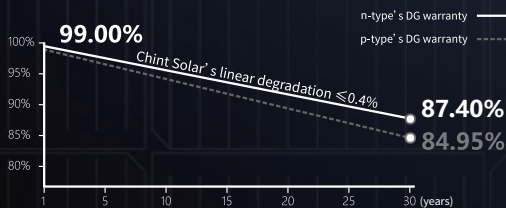
## 460~480W

TOPCon / Half-cut

Low temperature coefficient (Pmpp)

Non-destructive cutting

Low BOS cost & LCOE



30-year Product Warranty (special for rooftop market)

30-year Linear Power Warranty



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



**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

## Electrical Specifications

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

| Type                            | CHSM60N(DG)/F<br>-HC-460 | CHSM60N(DG)/F<br>-HC-465 | CHSM60N(DG)/F<br>-HC-470 | CHSM60N(DG)/F<br>-HC-475 | CHSM60N(DG)/F<br>-HC-480 |
|---------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Rated output (Pmpp / Wp)        | 460                      | 465                      | 470                      | 475                      | 480                      |
| Rated voltage (Vmpp / V)        | 36.02                    | 36.14                    | 36.27                    | 36.39                    | 36.52                    |
| Rated current (Impp / A)        | 12.77                    | 12.87                    | 12.96                    | 13.05                    | 13.14                    |
| Open circuit voltage (Voc / V)  | 42.86                    | 43.01                    | 43.16                    | 43.31                    | 43.46                    |
| Short circuit current (Isc / A) | 13.45                    | 13.57                    | 13.68                    | 13.80                    | 13.91                    |
| Module efficiency               | 21.3%                    | 21.5%                    | 21.8%                    | 22.0%                    | 22.2%                    |

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

|                                 |       |       |       |       |       |
|---------------------------------|-------|-------|-------|-------|-------|
| Rated output (Pmpp / Wp)        | 345.9 | 349.7 | 353.4 | 357.2 | 361.0 |
| Rated voltage (Vmpp / V)        | 33.90 | 34.02 | 34.14 | 34.26 | 34.37 |
| Rated current (Impp / A)        | 10.20 | 10.28 | 10.35 | 10.43 | 10.50 |
| Open circuit voltage (Voc / V)  | 40.71 | 40.85 | 40.99 | 41.14 | 41.28 |
| Short circuit current (Isc / A) | 10.86 | 10.95 | 11.04 | 11.14 | 11.23 |

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

## Temperature Ratings (STC)

|   |            |                              |                     |
|---|------------|------------------------------|---------------------|
| Temperature coefficient (Pmpp)              | -0.30%/°C  | No. of diodes                | 3                   |
| Temperature coefficient (Isc)               | +0.043%/°C | Junction box IP rating       | IP 68               |
| Temperature coefficient (Voc)               | -0.24%/°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    |                              |                     |

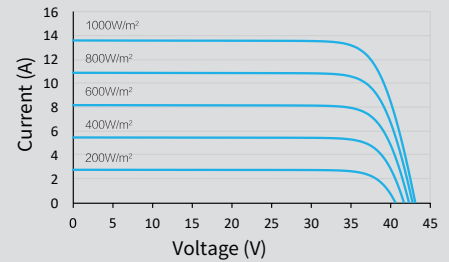
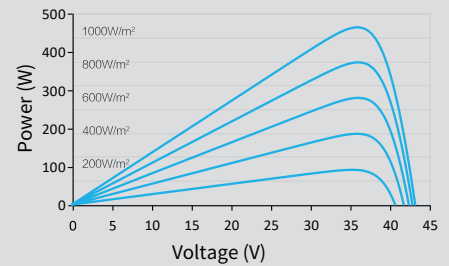
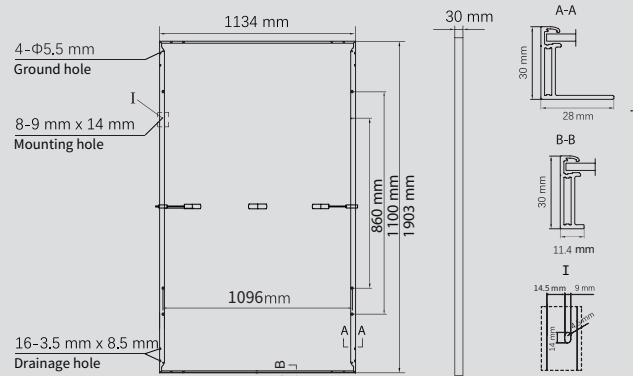
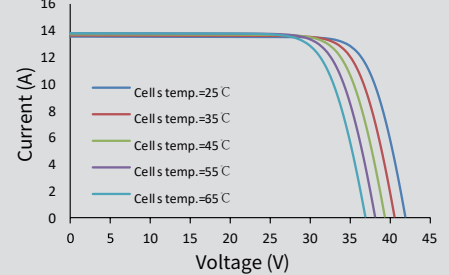
## Operating Parameters

## Mechanical Specifications

|   |  |
|---|--|
| Outer dimensions (L x W x H)                  | 1903 x 1134 x 30 mm  |
| Cell type                                     | n type mono-crystalline  |
| No. of cells                                  | 120 (6*20)   |
| Frame technology                              | Aluminum, silver anodized  |
| Front / Back glass                            | 1.6+1.6 mm   |
| Cable length (Including connector)            | Portrait: (+)350 mm, (-)250 mm;<br>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,<br>PV-KBT4-EVO2A/xy (Stäubli) |
| Module weight                                 | 22.9 kg  |
| Packing unit                                  | 36 pcs / box (Subject to sales contract)                                 |
| Weight of packing unit (for 40' HQ container) | 869 kg   |
| Modules per 40' HQ container                  | 864 pcs  |

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

## Curve

**Current-Voltage (470W)****Power-Voltage (470W)****Current-Voltage (470W)**

Made in Zhejiang, Jiangsu, Gansu, Jilin and Anhui of China, Made in Thailand.

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