



ASTRONERGY



# ASTRO N7s

CHSM48RN(DG)/F-BH  
Bifacial Series

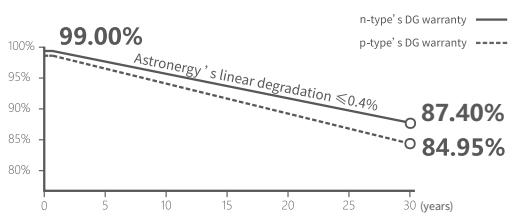
# 445~465W



## Warranty

**25** 25-year Product Warranty

**30** 30-year Linear Power Warranty



### n-type TOPCon 4.0

Novel upgrade, enhancing module efficiency



### ZBB Design

Zero-busbar integrated interconnection



### Sleek Design

≤ 2 m<sup>2</sup> area, easy to transport and install



### Integrated Appearance

Streamlined design without busbars or harpoon-like ribbons, perfect for upscale zero-carbon buildings



IEC 61215, IEC 61730  
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



**445~465W**

POWER RANGE

**0~+3%**

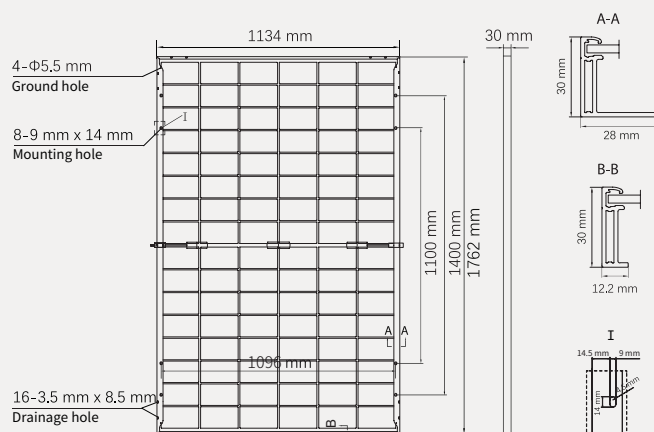
POWER SORTING

**23.3%**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)                 | 1762 x 1134 x 30 mm                      |
| Cell type                                    | n-type mono-crystalline                  |
| No. of cells                                 | 96 (6*16)                                |
| Frame technology                             | Aluminum, black or silver anodized       |
| Front / Back glass                           | 2.0+2.0 mm                               |
| Cable length (Including connector)           | Landscape: 1200 mm; or Customized length |
| Cable diameter (IEC/UL)                      | 4 mm <sup>2</sup> / 12 AWG               |
| ① Maximum mechanical test load               | 6000 Pa (front) / 4000 Pa (back)         |
| Connector type (IEC/UL)                      | MC4-EVO2A (Standard) / HCB40 (Optional)  |
| Module weight                                | 24.5 kg                                  |
| Packing unit                                 | 36 pcs / box                             |
| Weight of packing unit (for 40'HQ container) | 927 kg                                   |
| Modules per 40' HQ container                 | 936 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

|                                                   | 445   | 450   | 455   | 460   | 465   |
|---------------------------------------------------|-------|-------|-------|-------|-------|
| Rated output (P <sub>mpp</sub> / W <sub>p</sub> ) | 445   | 450   | 455   | 460   | 465   |
| Rated voltage (V <sub>mpp</sub> / V)              | 30.20 | 30.33 | 30.47 | 30.60 | 30.73 |
| Rated current (I <sub>mpp</sub> / A)              | 14.74 | 14.83 | 14.93 | 15.03 | 15.13 |
| Open circuit voltage (V <sub>oc</sub> / V)        | 36.25 | 36.42 | 36.58 | 36.74 | 36.90 |
| Short circuit current (I <sub>sc</sub> / A)       | 15.57 | 15.68 | 15.78 | 15.88 | 15.98 |
| Module efficiency                                 | 22.3% | 22.5% | 22.8% | 23.0% | 23.3% |

**BNPI:** Irradiance: front 1000W/m<sup>2</sup>, rear 135W/m<sup>2</sup>, Cell Temperature 25° C, AM=1.5

|                                                   | 490.4 | 495.9 | 501.4 | 506.9 | 512.4 |
|---------------------------------------------------|-------|-------|-------|-------|-------|
| Rated output (P <sub>mpp</sub> / W <sub>p</sub> ) | 490.4 | 495.9 | 501.4 | 506.9 | 512.4 |
| Rated voltage (V <sub>mpp</sub> / V)              | 30.21 | 30.34 | 30.48 | 30.61 | 30.74 |
| Rated current (I <sub>mpp</sub> / A)              | 16.23 | 16.34 | 16.45 | 16.56 | 16.67 |
| Open circuit voltage (V <sub>oc</sub> / V)        | 36.26 | 36.43 | 36.59 | 36.75 | 36.91 |
| Short circuit current (I <sub>sc</sub> / A)       | 17.24 | 17.36 | 17.47 | 17.58 | 17.69 |

## Temperature Ratings (STC)

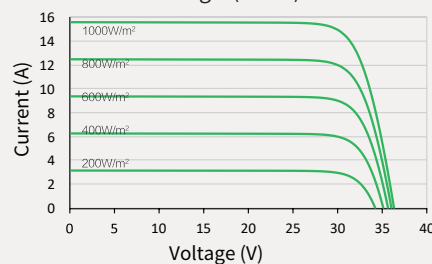
|                                             |            |
|---------------------------------------------|------------|
| Temperature coefficient (P <sub>mpp</sub> ) | -0.29%/°C  |
| Temperature coefficient (I <sub>sc</sub> )  | +0.043%/°C |
| Temperature coefficient (V <sub>oc</sub> )  | -0.25%/°C  |

## Operating Parameters

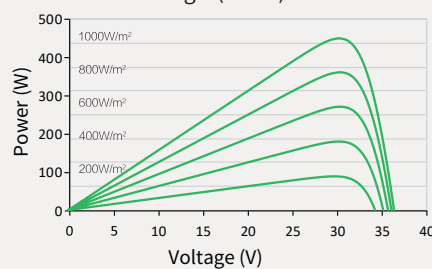
|                                 |                     |
|---------------------------------|---------------------|
| Bifaciality (P <sub>mpp</sub> ) | 80±5%               |
| Junction box IP rating          | IP 68               |
| Max. series fuse rating         | 35 A                |
| Max. system voltage (IEC/UL)    | 1500V <sub>DC</sub> |

## Curve

Current-Voltage (450W)



Power-Voltage (450W)



Current-Voltage (450W)

