



ASTRONERGY



# ASTRO N7s

CHSM48RN(DG)/F-BH  
Bifacial Series

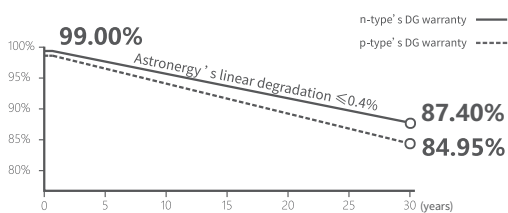
# 440~460W



## 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

$\leq 2 \text{ m}^2$  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



**440~460W**

POWER RANGE

**0~+3%**

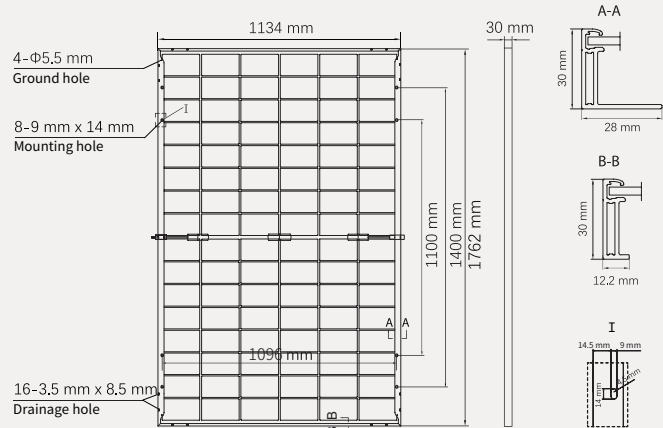
POWER SORTING

**23.0%**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)	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 (Standard) / MC4-EVO2A (Optional)
Module weight	24.4 kg
Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	923 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

	440	445	450	455	460
Rated output (Pmpp / Wp)	440	445	450	455	460
Rated voltage (Vmpp / V)	30.06	30.20	30.33	30.47	30.60
Rated current (Impp / A)	14.64	14.74	14.83	14.93	15.03
Open circuit voltage (Voc / V)	36.09	36.25	36.42	36.58	36.74
Short circuit current (Isc / A)	15.47	15.57	15.68	15.78	15.88
Module efficiency	22.0%	22.3%	22.5%	22.8%	23.0%

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

	485	490	495	500	505
Rated output (Pmpp / Wp)	485	490	495	500	505
Rated voltage (Vmpp / V)	30.07	30.20	30.34	30.47	30.61
Rated current (Impp / A)	16.13	16.22	16.32	16.41	16.50
Open circuit voltage (Voc / V)	36.10	36.26	36.42	36.58	36.74
Short circuit current (Isc / A)	17.13	17.23	17.33	17.42	17.52

## Temperature Ratings (STC)

Temperature coefficient (Pmpp)	-0.29%/°C
Temperature coefficient (Isc)	+0.043%/°C
Temperature coefficient (Voc)	-0.25%/°C

## Operating Parameters

Bifaciality (Pmpp)	80±5%
Junction box IP rating	IP 68
Max. series fuse rating	25 A
Max. system voltage (IEC/UL)	1500V <sub>DC</sub>

## Curve

