



ASTRONERGY



ASTRO N7s

CHSM48RN(DG)/F-BH
Bifacial Series

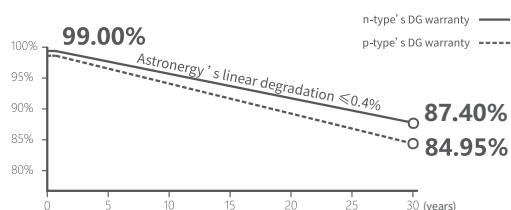
440~460W



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

≤ 2 m² 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

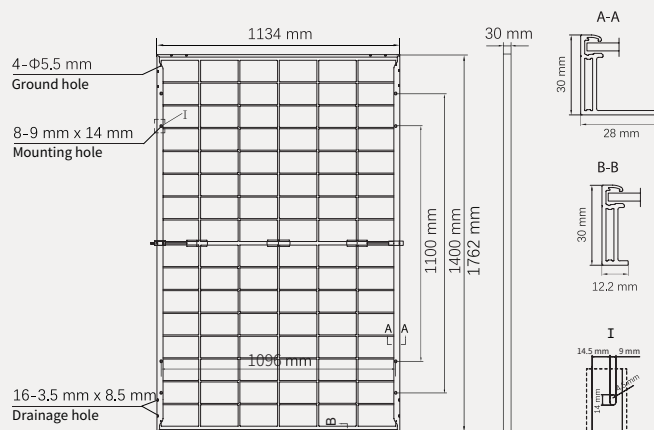
23.0%

MAX MODULE
EFFICIENCY $\leq 1.0\%$ FIRST YEAR
POWER DEGRADATION $\leq 0.4\%$ 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 ² / 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/m², Cell Temperature 25° C, AM=1.5

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/m², rear 135W/m², Cell Temperature 25° C, AM=1.5

Rated output (Pmpp / Wp)	484.9	490.4	495.9	501.4	506.9
Rated voltage (Vmpp / V)	30.07	30.21	30.34	30.48	30.61
Rated current (Impp / A)	16.12	16.23	16.34	16.45	16.56
Open circuit voltage (Voc / V)	36.10	36.26	36.43	36.59	36.75
Short circuit current (Isc / A)	17.13	17.24	17.36	17.47	17.58

Temperature Ratings (STC)

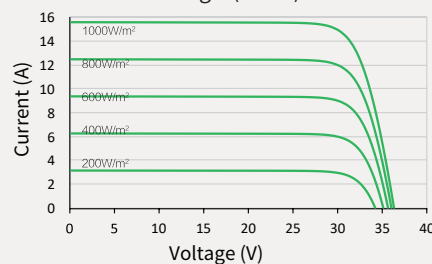
Temperature coefficient (Pmpp)	-0.29%/°C
Temperature coefficient (Isc)	+0.043%/°C
Temperature coefficient (Voc)	-0.25%/°C

Operating Parameters

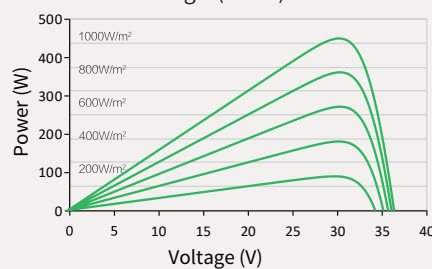
Bifaciality (Pmpp)	80±5%
Junction box IP rating	IP 68
Max. series fuse rating	30 A
Max. system voltage (IEC/UL)	1500V _{DC}

Curve

Current-Voltage (450W)



Power-Voltage (450W)



Current-Voltage (450W)

