



ASTRONERGY



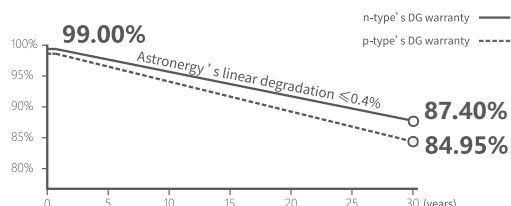
ASTRO N7s 2.0

CHSM48RN(DG)(BLH)/F-BH
Bifacial Series

450~465W

Warranty

- 30** 30-year Product Warranty (Specified for rooftop market)
- 30** 30-year Linear Power Warranty (Only to the front-side of modules)



Key Features

- High efficiency n-type TOPCon cells
- Dual glass for improved durability
- Manufacturing with AI technology
- Suitable for residential systems
- Easy to install and transport



ISO 9001:2015:ISO Quality Management System
ISO 14001:2015:ISO Environment Management System
ISO 45001:Occupational Health and Safety



Tier 1
BloombergNEF



450~465W

POWER RANGE

±5W

POWER SORTING

23.3%

MAX MODULE
EFFICIENCY

≤ 1.0%

FIRST YEAR
POWER DEGRADATION

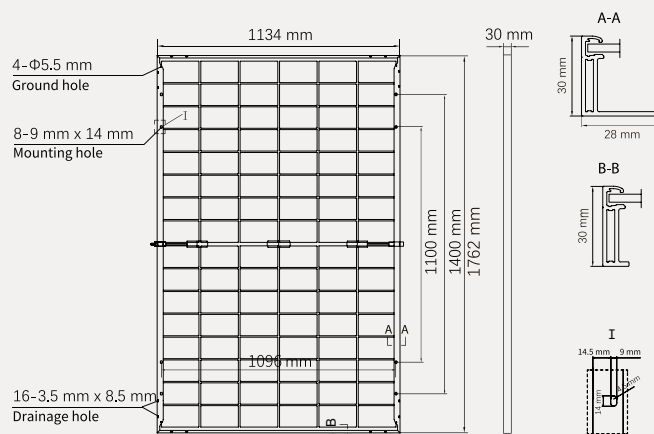
≤ 0.4%

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 anodized
Front / Back glass	2.0+2.0 mm (1.6+1.6 mm optional)
Cable length (Including connector)	landscape: (+) 1200mm, (-) 1200mm; customized length
Cable diameter (IEC/UL)	4 mm ² / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Connector type (IEC/UL)	PV-KST4EVO2A/xy, PV-KBT4-EVO2A/xy (Staubli) (standard) or PV-HCB40 (Chint New Energy) (optional)
Module weight	24.5 kg (21.5 kg for 1.6 mm glass)
Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	927 kg (820 kg for 1.6 mm glass)
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 CHSM48RN(DG)(BLH)/F-BH-XXX(XXX=450~465)

STC: Irradiance 1000W/m², Cell Temperature 25° C, AM=1.5

Rated output (P _{mpp} / W _p)	450	455	460	465
Rated voltage (V _{mpp} / V)	30.51	30.65	30.78	30.80
Rated current (I _{mpp} / A)	14.75	14.85	14.94	15.10
Open circuit voltage (V _{oc} / V)	36.59	36.75	36.91	36.93
Short circuit current (I _{sc} / A)	15.61	15.71	15.81	15.84
Module efficiency	22.5%	22.8%	23.0%	23.3%

Tolerance: P_{mpp} ±3%, V_{oc} ±3% and I_{sc} ±4%.

BNPI & BSI: Bifaciality(φP_{mpp}/φI_{sc}): 80±5%, Bifaciality(φV_{oc}): 98±5%

Rated output (P _{mpp} / W _p)	495.9	501.4	506.9	512.4
Rated voltage (V _{mpp} / V)	30.52	30.66	30.79	30.81
Rated current (I _{mpp} / A)	16.25	16.35	16.46	16.63
Open circuit voltage (V _{oc} / V)	36.60	36.76	36.92	36.94
Short circuit current (I _{sc} / A)	17.28	17.39	17.50	17.53
I _{sc} aBSI (BSI)	19.32	19.45	19.57	19.60

BNPI : Irradiance: front 1000W/m², rear 135W/m², Cell Temperature 25° C, AM=1.5

aBSI (BSI) : Irradiance: front 1000W/m², rear 300W/m²

Electrical characteristics with 10% Bifacial Gains

Rated output (P _{mpp} / W _p)	495.00	501.00	506.00	511.50
Rated voltage (V _{mpp} / V)	30.51	30.65	30.78	30.80
Rated current (I _{mpp} / A)	16.22	16.33	16.44	16.61
Open circuit voltage (V _{oc} / V)	36.59	36.76	36.91	36.93
Short circuit current (I _{sc} / A)	17.17	17.28	17.39	17.42

Temperature Ratings (STC)

Temperature coefficient (P _{mpp})	-0.29%/°C
Temperature coefficient (I _{sc})	+0.043%/°C
Temperature coefficient (V _{oc})	-0.25%/°C

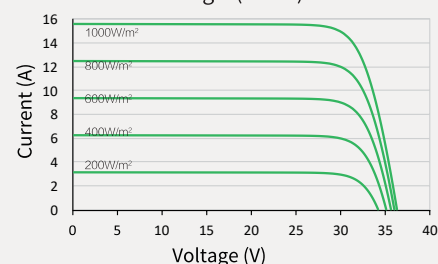
Fire performance: Class C

Operating Parameters

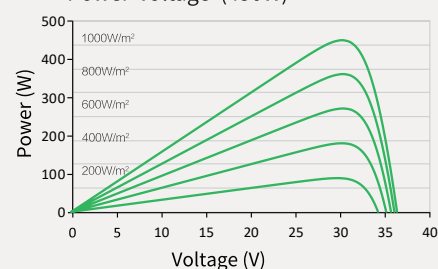
Operating Temperature	-40°C ~+85°C
No. of diodes	3
Junction box IP rating	IP 68
Max. series fuse rating	30 A
Max. system voltage (IEC/UL)	1500V _{DC}
Module [T98] max [°C]: 70	

Curve

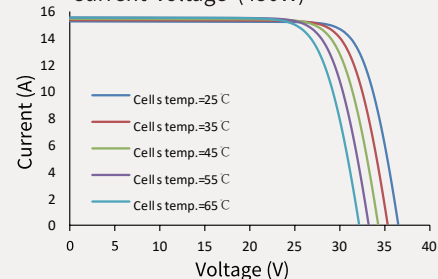
Current-Voltage (450W)



Power-Voltage (450W)



Current-Voltage (450W)



Made in China, Made in Turkey.

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