



ASTRONERGY



ASTRO N7s

CHSM48RN(DG)/F-BH
Bifacial Series

440~445W

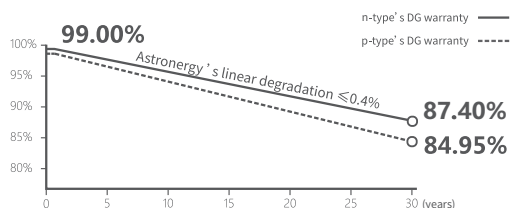
Warranty

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



440~445W

POWER RANGE

0~+3%

POWER SORTING

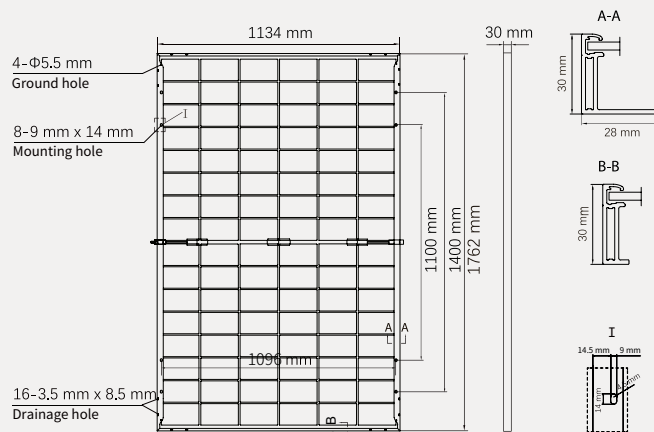
22.3%

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 (silver optional)
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)/F-BH-XXX(XXX=440~445)

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

Rated output (P _{mpp} / Wp)	440	445
Rated voltage (V _{mpp} / V)	30.06	30.20
Rated current (I _{mpp} / A)	14.64	14.74
Open circuit voltage (V _{oc} / V)	36.09	36.25
Short circuit current (I _{sc} / A)	15.47	15.57
Module efficiency	22.0%	22.3%

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

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

Rated output (P _{mpp} / Wp)	484.9	490.4
Rated voltage (V _{mpp} / V)	30.07	30.21
Rated current (I _{mpp} / A)	16.12	16.23
Open circuit voltage (V _{oc} / V)	36.10	36.26
Short circuit current (I _{sc} / A)	17.13	17.24

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

Electrical characteristics with 10% Bifacial Gains

Rated output (P _{mpp} / Wp)	484	490
Rated voltage (V _{mpp} / V)	30.06	30.20
Rated current (I _{mpp} / A)	16.10	16.21
Open circuit voltage (V _{oc} / V)	36.10	36.26
Short circuit current (I _{sc} / A)	17.02	17.13

Operating Parameters

No. of diodes	3
Junction box IP rating	IP 68
Max. series fuse rating	30 A
Max. system voltage (IEC/UL)	1500V _{DC}

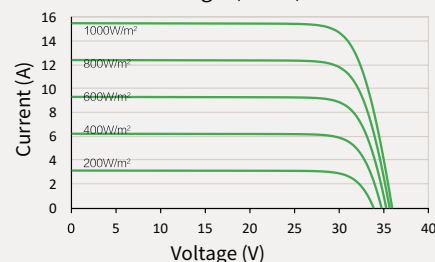
Fire performance: Class C

Temperature Ratings (STC)

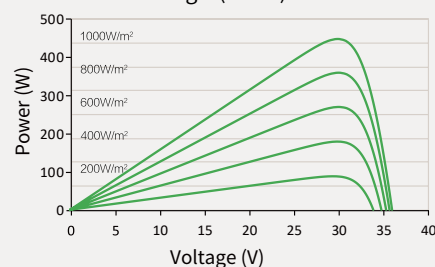
Temperature coefficient (P _{mpp})	-0.29%/°C
Temperature coefficient (I _{sc})	+0.043%/°C
Temperature coefficient (V _{oc})	-0.25%/°C

Curve

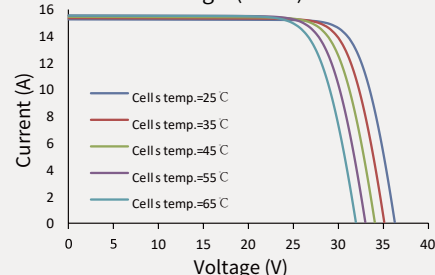
Current-Voltage (445W)



Power-Voltage (445W)



Current-Voltage (445W)



Made in China, Made in Turkey.

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