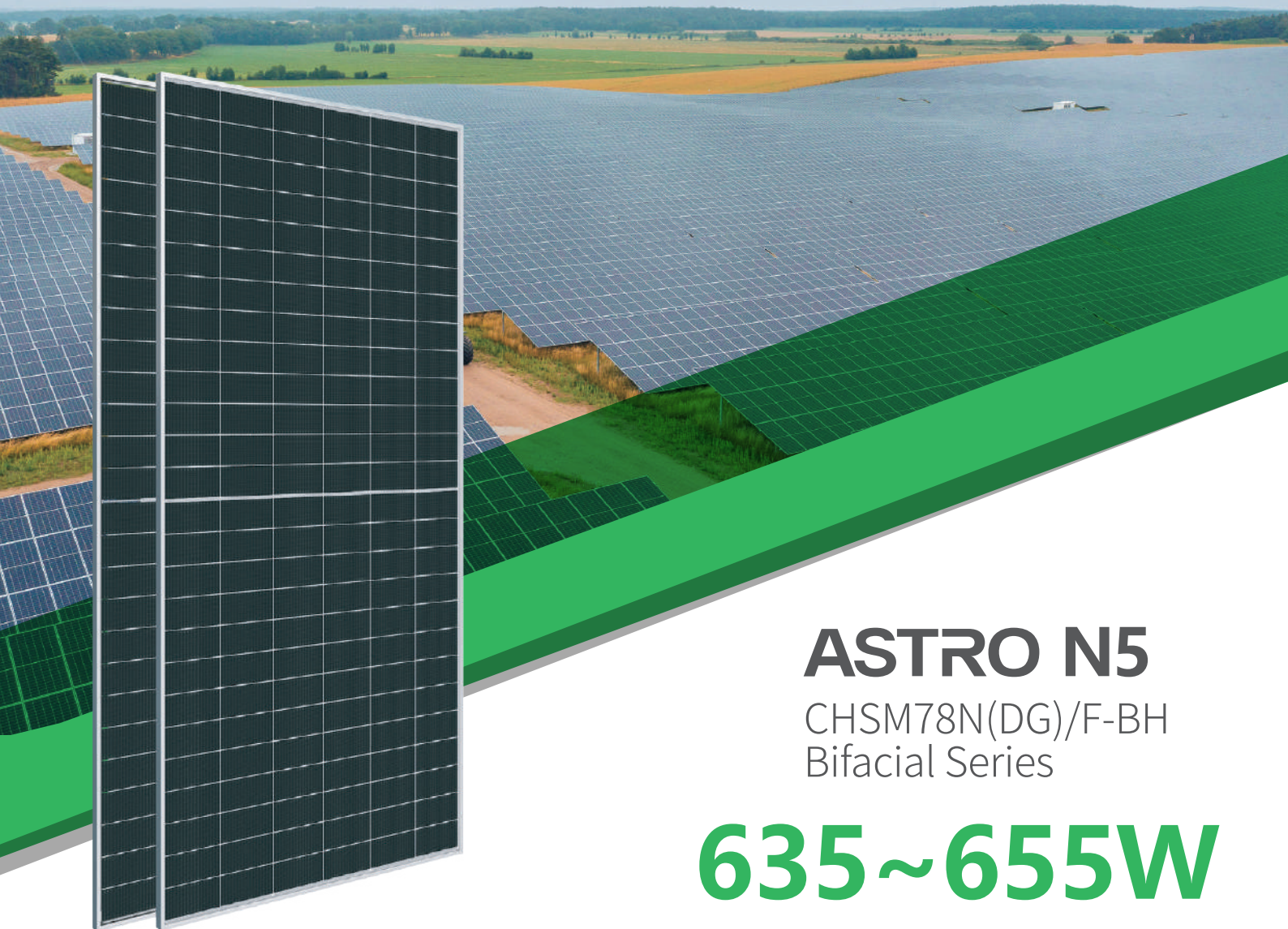




ASTRONERGY



ASTRO N5

CHSM78N(DG)/F-BH
Bifacial Series

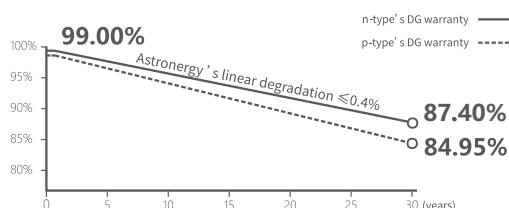
635~655W



Warranty

15 15-year Product Warranty

30 30-year Linear Power Warranty
(Only to the front-side of modules)



n-type TOPCon 4.0

Novel upgrade, enhancing module efficiency



SMBB Design

Enhancing current collection, minimizing power loss



Better Temperature Coefficient

$\leq -0.29\%/^{\circ}\text{C}$, adapting for high temperature



Bifacial Power Generation

Maximizing bifaciality, boosting backside power output



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



Tier 1
BloombergNEF



635~655W

POWER RANGE

0~+3%

POWER SORTING

23.4%

MAX MODULE
EFFICIENCY

≤ 1.0%

FIRST YEAR
POWER DEGRADATION

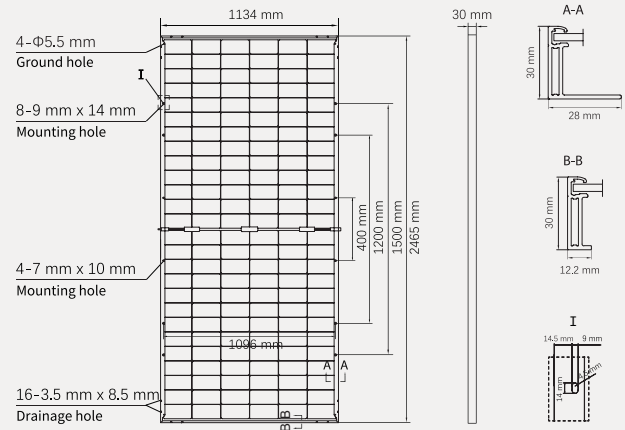
≤ 0.4%

YEAR 2-30
POWER DEGRADATION

Mechanical Specifications

Outer dimensions (L x W x H)	2465 x 1134 x 30 mm
Cell type	n-type mono-crystalline
No. of cells	156 (6*26)
Frame technology	Aluminum, 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 ² / 12 AWG
① Maximum mechanical test load	5400 Pa (front) / 2400 Pa (back)
Connector type (IEC/UL)	PV-HCB40 (Chint New Energy) or PV-KST4-EVO2A/xy, PV-KBT4-EVO2A/xy (Stäubli)
Module weight	34.7 kg
Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	1304 kg
Modules per 40' HQ container	576 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 CHSM78N(DG)/F-BH-XXX(XXX=635~655)

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

Rated output (P _{mpp} / Wp)	635	640	645	650	655
Rated voltage (V _{mpp} / V)	47.68	47.86	48.03	48.20	48.37
Rated current (I _{mpp} / A)	13.32	13.37	13.43	13.49	13.54
Open circuit voltage (V _{oc} / V)	56.68	56.88	57.08	57.28	57.48
Short circuit current (I _{sc} / A)	14.08	14.14	14.20	14.26	14.31
Module efficiency	22.7%	22.9%	23.1%	23.3%	23.4%

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

BNPI & BSI: Bifaciality(P_{mpp}/I_{sc}): 80±5%, Bifaciality(V_{oc}): 98±5%

Rated output (P _{mpp} / Wp)	698.2	703.7	709.2	714.7	720.2
Rated voltage (V _{mpp} / V)	47.70	47.87	48.04	48.22	48.38
Rated current (I _{mpp} / A)	14.64	14.70	14.76	14.82	14.89
Open circuit voltage (V _{oc} / V)	56.70	56.90	57.10	57.30	57.49
Short circuit current (I _{sc} / A)	15.52	15.59	15.65	15.72	15.78
I _{sc} [aBSI (BSI)]	17.28	17.35	17.43	17.50	17.57

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} / Wp)	699.00	704.00	710.00	715.00	720.50
Rated voltage (V _{mpp} / V)	47.68	47.86	48.03	48.20	48.37
Rated current (I _{mpp} / A)	14.65	14.71	14.77	14.83	14.90
Open circuit voltage (V _{oc} / V)	56.69	56.89	57.09	57.28	57.48
Short circuit current (I _{sc} / A)	15.49	15.55	15.62	15.68	15.75

Temperature Ratings (STC)

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

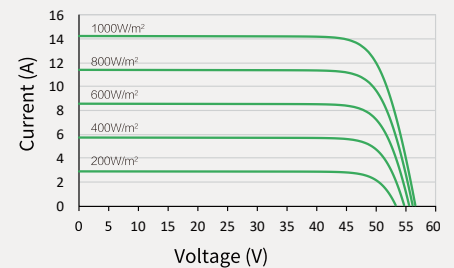
Fire performance: Class A / Class C

Operating Parameters

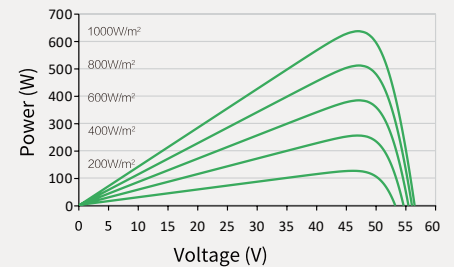
Operating Temperature	-40°C ~+85°C
No. of diodes	3
Junction box IP rating	IP 68
Max. series fuse rating	30 A
Max. system voltage (IEC/UL)	1500V _{DC}
Module [T98] max [°C]: 70	

Curve

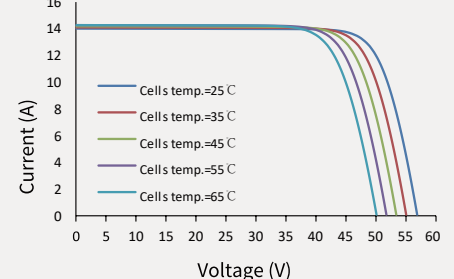
Current-Voltage (635W)



Power-Voltage (635W)



Current-Voltage (635W)



Made in China, Made in Turkey.

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