ASTRONERGY

ASTRO N7s

CHSM54RNs(DG)(BLH)/F-BH
Bifacial Series

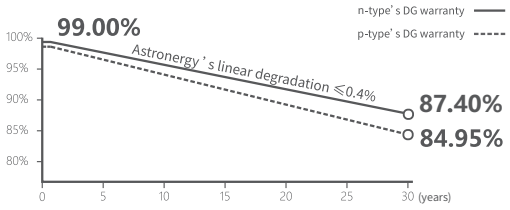
440~460W

Assist carbon neutrality

Warranty

25 25-year Product Warranty

30 30-year Linear Power Warranty



n-type TOPCon 4.0
Novel upgrade, enhancing module efficiency

ZBB-TF (Tiling Film)
Zero-busbar integrated interconnection

Sleek Design
⩽ 2 ㎡ area, easy to transport and install

All-black Technology
Sleek crystalline black appearance, seamlessly blending into rooftops

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

TOP PERFORMER 2024 kiwa PVEL PV MODULE RELIABILITY SCORECARD

Tier 1 BloombergNEF

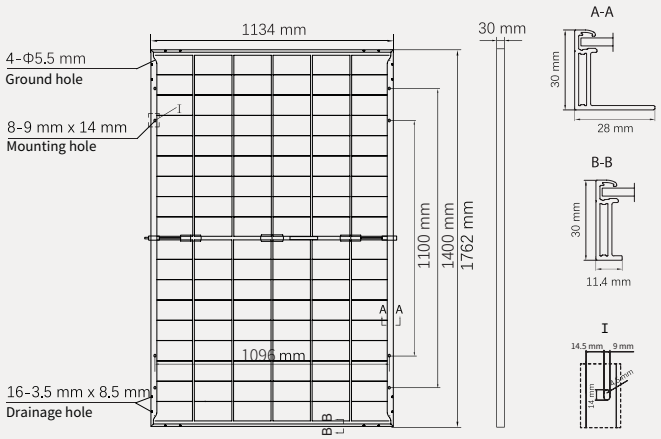
Underwritten by International Insurer

440~460W	0~+3%	23.0%	≤ 1.0%	≤ 0.4%
POWER RANGE	POWER SORTING	MAX MODULE EFFICIENCY	FIRST YEAR POWER DEGRADATION	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	108 (6*18)
Frame technology	Aluminum, black anodized
Front / Back glass	1.6+1.6 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)	HCB40 (Standard) / MC4-EVO2A (Optional)
Module weight	21.5 kg
Packing unit	36 pcs / box
Weight of packing unit (for 40'HQ container)	820 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^2, Cell Temperature 25° C, AM=1.5

Rated output (Pmpp / Wp)	440	445	450	455	460
Rated voltage (Vmpp / V)	33.05	33.22	33.39	33.56	33.73
Rated current (Impp / A)	13.31	13.40	13.48	13.56	13.64
Open circuit voltage (Voc / V)	39.00	39.20	39.40	39.60	39.80
Short circuit current (Isc / A)	14.10	14.19	14.28	14.36	14.45
Module efficiency	22.0%	22.3%	22.5%	22.8%	23.0%

NMOT: Irradiance 800W/m^2, Ambient Temperature 20° C, AM=1.5, Wind Speed 1m/s

Rated output (Pmpp / Wp)	330.9	334.6	338.4	342.2	345.9
Rated voltage (Vmpp / V)	31.11	31.27	31.43	31.59	31.75
Rated current (Impp / A)	10.64	10.70	10.77	10.83	10.90
Open circuit voltage (Voc / V)	37.04	37.23	37.42	37.61	37.80
Short circuit current (Isc / A)	11.38	11.46	11.53	11.59	11.66

Electrical Specifications (Integrated power)

Pmpp gain	Pmpp / Wp	Vmpp / V	Impp / A	Voc / V	Isc / A
5%	473	33.39	14.15	39.40	14.99
10%	495	33.39	14.82	39.40	15.70
15%	518	33.39	15.50	39.40	16.42
20%	540	33.39	16.17	39.40	17.13
25%	563	33.39	16.85	39.40	17.85

Electrical characteristics with different rear power gain (reference to 450W)

Temperature Ratings (STC)

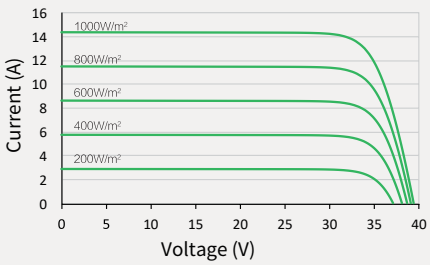
Temperature coefficient (Pmpp)	-0.29%/°C
Temperature coefficient (Isc)	+0.043%/°C
Temperature coefficient (Voc)	-0.25%/°C
Nominal module operating temperature (NMOT)	41±2°C

Operating Parameters

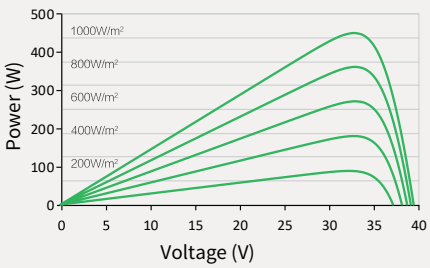
No. of diodes	3
Junction box IP rating	IP 68
Max. series fuse rating	30 A
Max. system voltage (IEC/UL)	1500V_{DC}

Curve

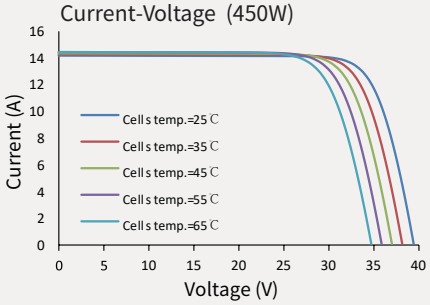
Current-Voltage (450W)



Power-Voltage (450W)



Current-Voltage (450W)



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