

144

Cells

N-Type TOPCon Half-Cut PV Module

560Wp - 600Wp

Bifacial (Glass to Glass)

M10 Cells



Max. 23.24%
Module Efficiency

Upto ~+5Wp
Power Tolerance

80 ± 10%
Bifaciality Factor

IP68 split
Junction Box

2400 Pa & 5400 Pa
Wind & Snow Load Capacity



Bi-Facial Power Gain

Upto 30% power gain depending on the installation & albedo of the reflecting surface.



MBB Cell Technology

Lower conversion loss, better partial shade performance, improved light absorption and reduced cell stress.



Round Ribbons

Cylindrical tabbing wires to reduce shadow on active area of the cell and increase light absorption.



Reduced Degradation

Lower Light-Induced Degradation (LID) & Light and Elevated Temperature-Induced Degradation (LeTID) degradation.



Lower Thermal Co-efficients

Better Temperature Co-efficients resulting in higher power generation in high ambient temperatures.



0% Microcracks & Hotspots

PRE & POST Electroluminescence checks to ensure defect free modules.



High Profitability

Reduced BOS cost resulting in more savings, lower LCOE & shorter payback period.



ARC Glass

Highly Reliable AR Coated, Anti-Reflective Module surface for more light absorption.



Linear Output Performance



Product & Workmanship

Certifications



IEC 61215/IS14286, IEC 61730-1, IEC 61730-2, IEC 62804 (PID), IEC 61701 (Salt Mist), IEC 62716 (Ammonia Corrossion), IEC 61853 (Performance, PAN & IAM), IEC 60068-2 (Sand Dust), IEC 62782 (DMLT), LID, LeTID, BIS Approved, ALMM Enlisted

Applications



Utility Projects



C & I Projects



Home & Residential



Water Pumps

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Module Series	Module Name BBS24MCHHH-TB (HHH=560 - 600)								
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Electrical Characteristics at STC

Maximum Power Pmax (Wp)	560	565	570	575	580	585	590	595	600
Maximum Voltage Vmpp (V)	42.73	42.68	42.72	42.88	43.02	43.25	43.75	44.16	44.37
Maximum Current Impp (A)	13.12	13.25	13.35	13.42	13.49	13.53	13.49	13.48	13.53
Open Circuit Voltage Voc (V)	51.14	51.17	51.28	51.45	51.63	51.82	52.23	53.75	54.00
Short Circuit Current Isc (A)	13.78	13.93	14.05	14.11	14.19	14.22	14.11	14.01	14.05
Module Efficiency (%)	21.70	21.89	22.07	22.27	22.46	22.66	22.85	23.04	23.24
Fill Factor %	79.57	79.34	79.17	79.22	79.24	79.45	80.09	79.05	79.13

STC:1000W/m² irradiance, 25°C cell temperature, AM1.5G spectrum according to EN 60904-3Average relative efficiency reduction of-5% for every 200W/m² reduction in Irradiance, according to EN 60904-1

Electrical Characteristics at NOCT

Maximum Power Pmax (Wp)	420.00	423.75	427.50	431.25	435.00	438.75	442.50	446.25	450.00
Maximum Voltage Vmpp (V)	39.71	39.67	39.71	39.85	39.98	40.20	40.66	41.04	41.24
Maximum Current Impp (A)	10.58	10.69	10.76	10.82	10.88	10.91	10.88	10.87	10.91
Open Circuit Voltage Voc (V)	48.18	48.21	48.32	48.48	48.64	48.83	49.22	50.65	50.88
Short Circuit Current Isc (A)	11.11	11.23	11.32	11.38	11.44	11.46	11.38	11.30	11.33

NOCT:800W/m² irradiance, 20°C ambient temperature, Wind Speed 1m/sec

Backside Bi-faciality Power Gain

10% Power Output (Wp)	616	622	627	633	638	644	649	655	660
Module Efficiency (%)	23.85	24.06	24.27	24.48	24.7	24.91	25.12	25.34	25.55
15% Power Output (Wp)	644	650	656	661	667	673	679	684	690
Module Efficiency (%)	24.93	25.15	25.37	25.6	25.82	26.04	26.27	26.49	26.71
20% Power Output (Wp)	672	678	684	690	696	702	708	714	720
Module Efficiency (%)	26.01	26.25	26.48	26.71	26.94	27.18	27.41	27.64	27.87
25% Power Output (Wp)	700	706	713	719	725	731	738	744	750
Module Efficiency (%)	27.1	27.34	27.58	27.82	28.07	28.31	28.55	28.79	29.03
30% Power Output (Wp)	728	735	741	748	754	761	767	774	780
Module Efficiency (%)	28.18	28.43	28.68	28.94	29.19	29.44	29.69	29.94	30.19

Bifacial gains depends on the power plant design and albedo of installation site
BNPP: 1000W/m²±0.5%, BIFACIALITY COEFF (%): AT BNPP Pmax, ISC IS 70±10% & FOR VOC IS 99±10%, AM 1.5, 25°C
TOLERANCE OF RATING AT BNPP (PMPP/ ISC/ VOC) (%): 0-3/±5/±5

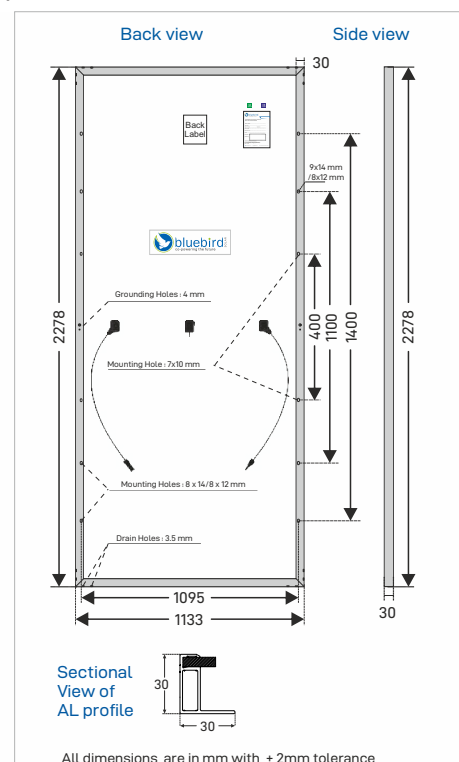
Temperature coefficient (Tc) and permissible operating conditions

Tc of Open Circuit Voltage	-0.25%/°C
Tc of Short Circuit Current	0.045%/°C
Tc of Power	-0.29%/°C
NOCT	45 ± 2°C
Maximum series fuse ratings	30A
Temperature Range	-40°C to +85°C
Bi-faciality Factor	80 ± 10%
Maximum System Voltage	1500V DC

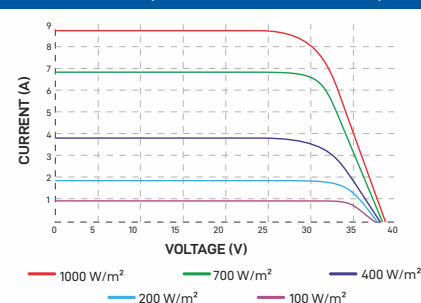
Mechanical Data

Dimension (LxWxH)	2278mm x 1133mm x 30mm
Weight	32 Kg ± 2%
Solar Cells (PID Free)	144 (12 x 6 x 2) N-TOPCon Solar Cells, 16BB, (182x91mm)
Superstrate	2mm AR Coated, high transmission low iron tempered glass
EVA / Encapsulant	EVA / POE / EPE - PID Free & UV Resistant
Substrate	2mm high transmission low iron tempered glass
Frame	Silver Anodized Aluminum frame with twin wall profile
Junction Box	IP68, Split Junction Box with 3 individual bypass diodes
Cables & Connectors	4 sq.mm cables, 400 mm (+Ve) and 400 mm (-Ve) cables length, MC4 Compatible or MC4 Connectors
Application Class	Class A (Safety class II)
Mechanical Load Test	Sustain heavy static load (2400 Pa & 5400 Pa)
Packaging	Standard 30 modules per pallet

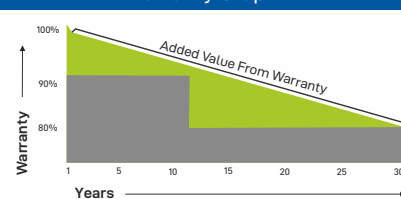
**Refer to Bluebird Solar's warranty documents for terms and conditions.

Specification and electrical data included in this datasheet are subject to change without notice. Please confirm your requirements with the company representative while placing your order.
Note: It is mandatory to make negative grounding of modules in all installation to avoid PID issue.

I-V Curve (for Different Irradiance)



Warranty Graph



Product Warranty : 12 Years

Performance Warranty : Linear Power Warranty for 30 years with <1% degradation for 1st year and 0.4% from 2 to 30 year.

Approvals and Certifications

Products:*	IEC 61215/IS14286, IEC 61730-1, IEC 61730-2, IEC 62804 (PID), IEC 61701 (Salt Mist), IEC 62716 (Ammonia Corrosion), IEC 61853 (Performance, PAN & IAM), IEC 60068-2 (Sand Dust), IEC 62782 (DMLT), LID, LeTID, BIS Approved, ALMM Enlisted
Manufacturing:	ISO 9001:2015, ISO 14001: 2015, ISO 45001:2018

*some certifications are under process

Packaging Information

Truck Type	Pallet/Truck	Modules/Truck	KW/Truck(Approx)
19 ft.	10	300	162
22 ft.	12	360	194.4
32 ft.	18	540	291.6
40 ft.	22	660	356.4
Container Type	Pallet/Truck	Module/Truck	KW/Truck(Approx)
40 HQ	22	660	356.4

Above quantities are subject to variation depending on miscellaneous Factors
Trucks under consideration are all open body trucks. | Customized packaging available.

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