

156

Cells

N-Type TOPCon Half-Cut PV Module

605Wp - 645Wp

Bifacial (Glass to Glass)

M10 Cells



Max. 23.09%
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=605 - 645)								
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Electrical Characteristics at STC

Maximum Power Point Pmax	605	610	615	620	625	630	635	640	645
Max Power Voltage Vmp	46.30	46.42	46.58	46.74	46.88	47.03	47.00	47.57	47.72
Max Power Current Imp	13.07	13.15	13.21	13.27	13.34	13.40	13.52	13.46	13.52
Open Circuit Voltage Voc	54.77	55.52	55.71	55.92	56.10	56.29	57.00	57.97	58.15
Short Circuit Current Isc	13.76	13.79	13.85	13.92	13.98	14.04	14.20	14.00	14.05
Module Efficiency at STC (%)	21.66	21.84	22.02	22.20	22.38	22.56	22.74	22.92	23.09
Fill Factor (%)	80.30	79.71	79.74	79.71	79.75	79.75	78.50	78.89	78.97

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 Point Pmax	453.75	457.50	461.25	465.00	468.75	472.50	476.25	480.00	483.75
Max Power Voltage Vmp	43.03	43.14	43.29	43.44	43.57	43.71	43.68	44.21	44.35
Max Power Current Imp	10.54	10.60	10.65	10.70	10.76	10.81	10.90	10.86	10.90
Open Circuit Voltage Voc	51.61	52.31	52.50	52.69	52.86	53.04	53.71	54.62	54.79
Short Circuit Current Isc	11.09	11.12	11.17	11.22	11.27	11.32	11.44	11.29	11.33

NOCT:800W/m² irradiance, 20°C ambient temperature, Wind Speed 1m/sec**Backside Bi-faciality Power Gain**

10% Power Output (Wp)	666	671	677	682	688	693	699	704	710
Module Efficiency (%)	23.83	24.03	24.22	24.42	24.62	24.81	25.01	25.21	25.40
15% Power Output (Wp)	696	702	707	713	719	725	730	736	742
Module Efficiency (%)	24.91	25.12	25.32	25.53	25.74	25.94	26.15	26.35	26.56
20% Power Output (Wp)	726	732	738	744	750	756	762	768	774
Module Efficiency (%)	25.99	26.21	26.42	26.64	26.85	27.07	27.28	27.50	27.71
25% Power Output (Wp)	756	763	769	775	781	788	794	800	806
Module Efficiency (%)	27.08	27.30	27.53	27.75	27.97	28.20	28.42	28.64	28.87
30% Power Output (Wp)	787	793	800	806	813	819	826	832	839
Module Efficiency (%)	28.16	28.39	28.63	28.86	29.09	29.32	29.56	29.79	30.02

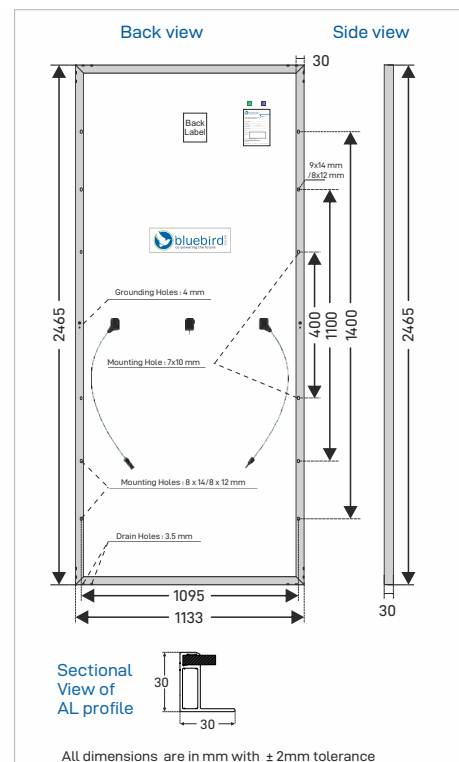
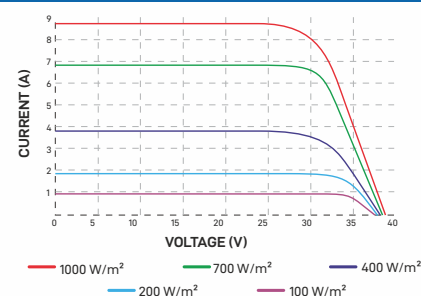
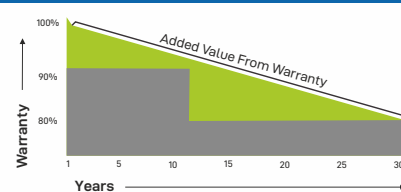
Bifacial gains depends on the power plant design and albedo of installation site
BNPP: 1000W/m²±0.5%, BIFACIALITY COEFF (%): AT BNPP Pmax, Isc IS 70±10% & FOR VOC IS 99±10%, AM 1.5, 25°C
TOLERANCE OF RATINGS AT BNPP (PMP/ISC/VOC) (%): 0-3/±5/±5**Temperature coefficient (Tc) and permissible operating 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)	2465mm x 1133mm x 30mm
Weight	35 Kg ± 2%
Solar Cells (PID Free)	156 (13 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.**BLUEBIRD SOLAR PVT. LTD.**

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