

ELITE R SERIES N-TYPE

BiN-33-490 to BiN-33-520

Framed Dual Glass Bifacial module

WAAREE®

One with the Sun



Highest reliability & enhanced crack tolerance MBB module



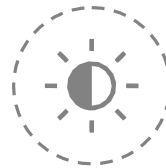
Sustain heavy snow & wind loads (5400 Pa & 2400 Pa)



Best in class thermal coefficients



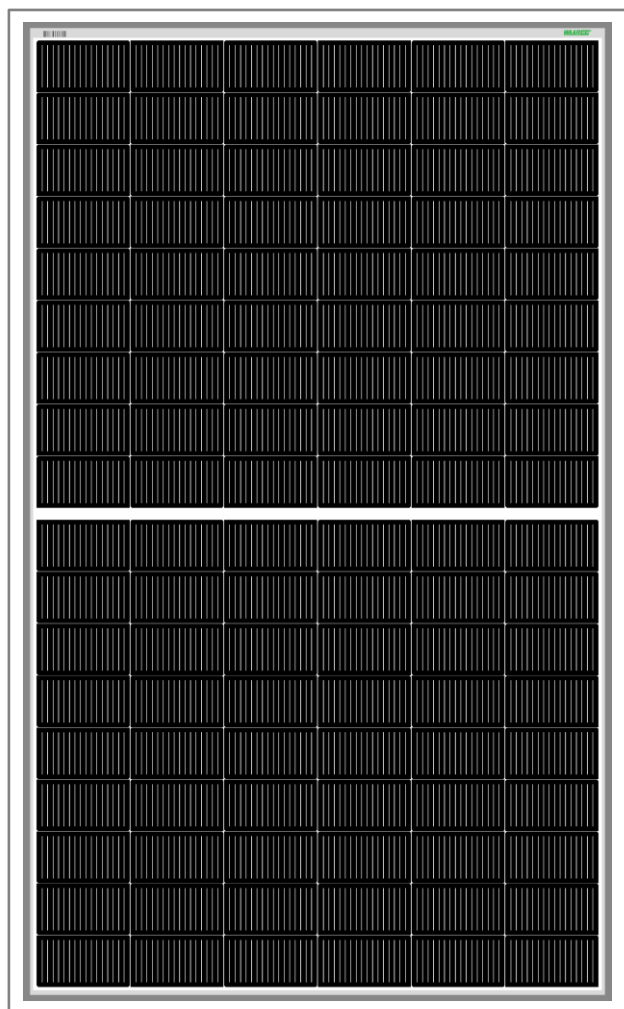
Highest commercial gains, lower LCOE



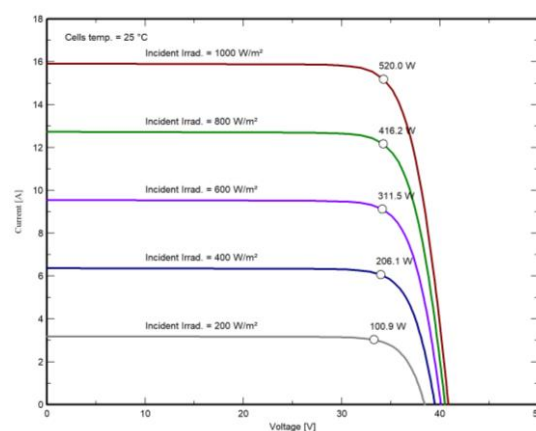
Better weak light performance



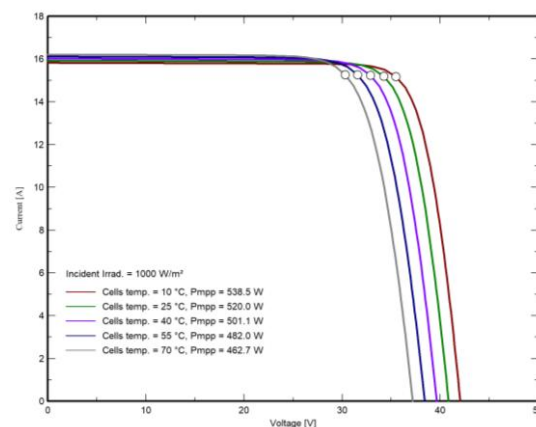
Excellent PID resistance



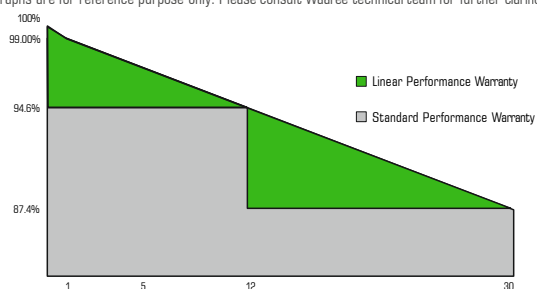
I-V VARIATION WITH IRRADIANCE



I-V VARIATION WITH TEMPERATURE



The Graphs are for reference purpose only. Please consult Waaree technical team for further clarifications.



ISO 9001:2015 | ISO 14001:2015 | ISO 45001:2018
Independent assessment of factories by BLACK & VEATCH

www.waaree.com

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ELECTRICAL CHARACTERISTICS

Models	Pmax (W)		Vmp (V)		Imp (A)		Isc (A)		Voc (V)		Module Eff. (%)
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	
BiN-33-490	490	370	33.17	30.92	14.77	11.91	15.79	12.73	39.89	37.90	22.03
BiN-33-495	495	374	33.43	31.16	14.81	11.93	15.81	12.74	40.05	38.05	22.26
BiN-33-500	500	378	33.69	31.40	14.84	11.96	15.83	12.76	40.21	38.20	22.48
BiN-33-505	505	381	33.95	31.64	14.88	11.99	15.85	12.77	40.37	38.36	22.71
BiN-33-510	510	385	34.21	31.89	14.91	12.02	15.87	12.79	40.53	38.51	22.93
BiN-33-515	515	389	34.47	32.13	14.95	12.05	15.89	12.81	40.69	38.66	23.16
BiN-33-520	520	393	34.73	32.37	14.98	12.08	15.91	12.82	40.85	38.81	23.38

*Standard Test Conditions (STC) - 1000 W/m² irradiance, Air Mass 1.5 and 25°C cell temperature. Nominal Operating Cell Temperature (NOCT) - 800 W/m² irradiance, Air Mass 1.5, Ambient temperature 20°C and Wind speed 1 m/s. Average power reduction of 4.5% at 200 W/m² as per IEC 60904-1. Measuring Uncertainty ± 3%.

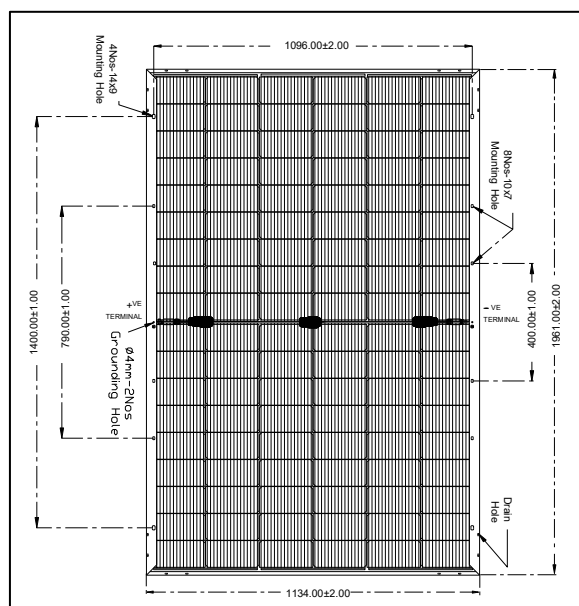
System Voltage	1500 V	Series Fuse Rating	30 A
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BI-FACIAL OUTPUT - BACKSIDE POWER GAIN*

		BiN-33-490	BiN-33-495	BiN-33-500	BiN-33-505	BiN-33-510	BiN-33-515	BiN-33-520
10%	Power Output (W)	539	545	550	556	561	567	572
	Module Efficiency (%)	24.24	24.49	24.73	24.98	25.23	25.47	25.72
15%	Power Output (W)	564	569	575	581	587	592	598
	Module Efficiency (%)	25.34	25.60	25.86	26.12	26.37	26.63	26.89
20%	Power Output (W)	588	594	600	606	612	618	624
	Module Efficiency (%)	26.44	26.71	26.98	27.25	27.52	27.79	28.06
25%	Power Output (W)	613	619	625	631	638	644	650
	Module Efficiency (%)	27.54	27.82	28.11	28.39	28.67	28.95	29.23
30%	Power Output (W)	637	644	650	657	663	670	676
	Module Efficiency (%)	28.64	28.94	29.23	29.52	29.81	30.11	30.40

*The bifacial gains are dependant on the power plant design and location

DESIGN SPECIFICATIONS



THERMAL CHARACTERISTICS

Temperature coefficient of Current (Isc), α (%/°C)	0.046
Temperature coefficient of Voltage (Voc), β (%/°C)	-0.26
Temperature coefficient of Power (Pm), γ (%/°C)	-0.30
NOCT (°C)	43 ± 2
Operating temperature range (°C)	-40 to 85
Bifaciality	80 ± 10

MECHANICAL CHARACTERISTICS

Length x Width x Thickness (L x W x T)	1961 mm (L) x 1134 mm (W) x 35 mm (T)
Weight	28 kgs
Solar Cells per Module (Units) / Arrangement	108 cells / (9x6 9x6)
Solar Cell Type & Size	G12R N-type Bifacial
Front Glass (Material / Thickness)	2 mm Low Iron HTAR semi-tempered glass
Back Glass (Material / Thickness)	2 mm Low Iron Printed semi-tempered glass
Encapsulate	PID Free & UV Resistant
Junction Box (Protection degree / Material)	IP68 / Weatherproof PPO, 3 Diodes
Cable & Connector (Protection degree / Type)	IP68 rated / MC4 compatible
Cable cross - section & Length	4 mm ² & 500mm
Frame	Anodized Aluminium Alloy

Waaree Energies Ltd. is amongst the top Solar Energy Companies and has the country's largest Solar PV Module manufacturing capacity of 12 GW. In addition, it is committed to provide top notch EPC services, project development, rooftop solutions, solar water pumps and also in an Independent Power Producer. Waaree has its presence in over 350+ locations nationally and 68 countries globally.

12 Years Product Warranty • **30 Years** Power Output Warranty

- The electrical data given here is for reference purpose only.
- Please confirm your exact requirements with the sales representative while placing your order.
- Refer installation Manual instructions & Waaree warranty statement for terms & conditions.
- Waaree Reserves the right to change the specifications without prior notice.