# ELITE SERIES
# N TOPCON TECHNOLOGY

## BiN-06-465 to BiN-06-490
## Framed Dual Glass Bifacial module

WAAREE®
One with the Sun

Highest reliability & enhanced crack toleranceMBB module

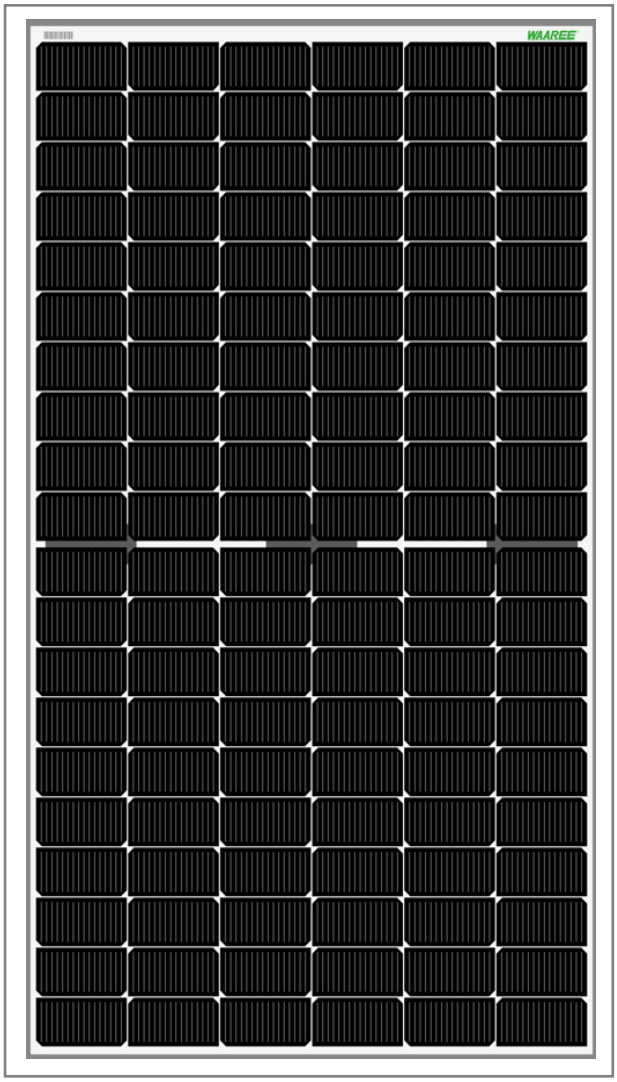
Sustain heavy snow & wind loads (5400 Pa & 2400 Pa)

Best in class thermal coefficients

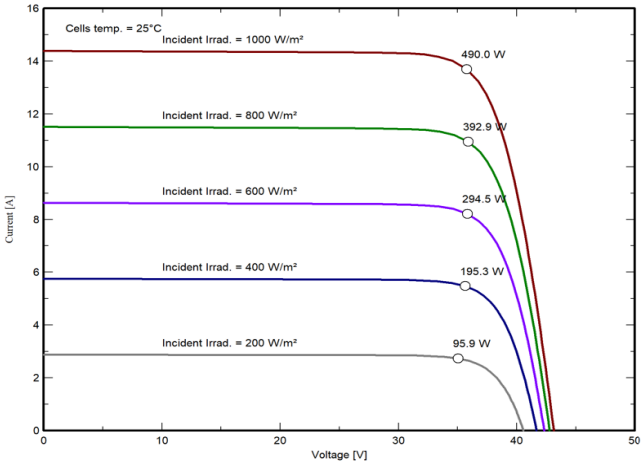
Highest commercial gains, lower LCOE

Better weak light performance

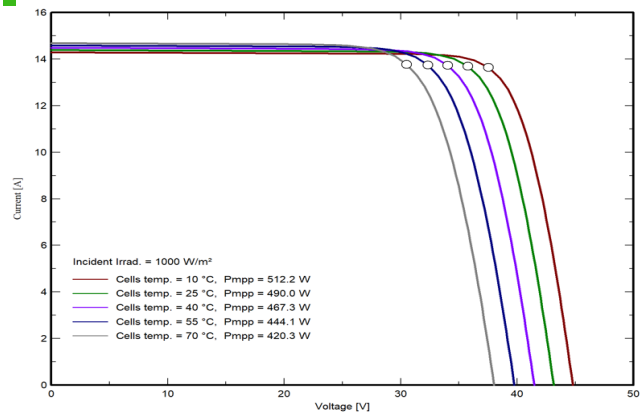
Excellent PID resistance



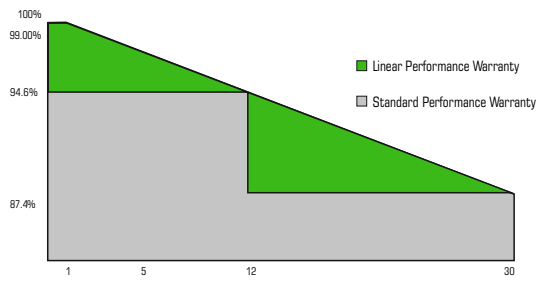

## I-V VARIATION WITH IRRADIANCE




## I-V VARIATION WITH TEMPERATURE




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




IEC 61215, IEC 61730
UL 61730-1, UL 61730-2

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

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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-06-465 | 465 | 351.1 | 35.20 | 32.98 | 13.21 | 10.65 | 14.02 | 11.30 | 42.24 | 40.13 | 21.53 |
| BiN-06-470 | 470 | 354.9 | 35.39 | 33.16 | 13.28 | 10.70 | 14.09 | 11.36 | 42.36 | 40.24 | 21.76 |
| BiN-06-475 | 475 | 358.6 | 35.58 | 33.34 | 13.35 | 10.76 | 14.16 | 11.41 | 42.54 | 40.41 | 21.99 |
| BiN-06-480 | 480 | 362.4 | 35.77 | 33.51 | 13.42 | 10.82 | 14.23 | 11.47 | 42.72 | 40.58 | 22.22 |
| BiN-06-485 | 485 | 366.2 | 35.95 | 33.69 | 13.49 | 10.87 | 14.30 | 11.53 | 42.90 | 40.76 | 22.45 |
| BiN-06-490 | 490 | 370.0 | 36.11 | 33.83 | 13.57 | 10.94 | 14.38 | 11.59 | 43.14 | 40.98 | 22.68 |

*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 |
|---|---|

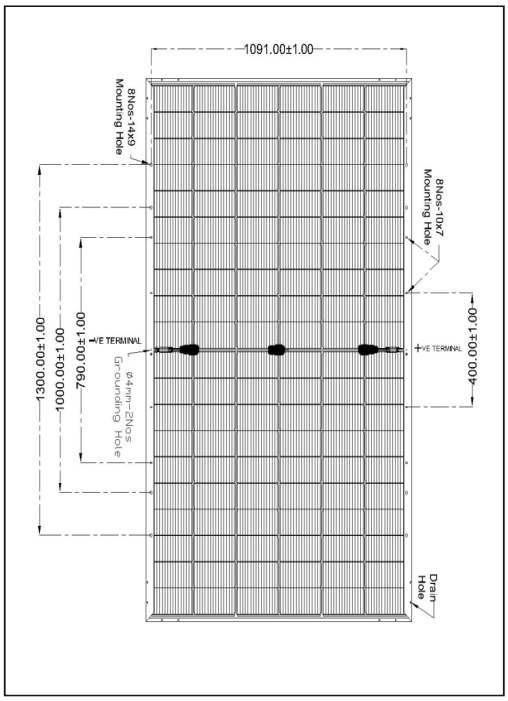
| Series Fuse Rating | 25 A |
|---|---|

## BI-FACIAL OUTPUT - BACKSIDE POWER GAIN*

| | | BiN-06-465 | BiN-06-470 | BiN-06-475 | BiN-06-480 | BiN-06-485 | BiN-06-490 |
|---|---|---|---|---|---|---|---|
| 15% | Power Output (W) | 535 | 541 | 546 | 552 | 558 | 563 |
| | Module Efficiency (%) | 24.77% | 25.05% | 25.31% | 25.58% | 25.84% | 26.08% |
| 20% | Power Output (W) | 558 | 564 | 570 | 576 | 582 | 588 |
| | Module Efficiency (%) | 25.85% | 26.14% | 26.41% | 26.69% | 26.96% | 27.21% |
| 25% | Power Output (W) | 581 | 588 | 594 | 600 | 606 | 612 |
| | Module Efficiency (%) | 26.93% | 27.23% | 27.51% | 27.80% | 28.09% | 28.35% |
| 30% | Power Output (W) | 605 | 611 | 618 | 624 | 631 | 637 |
| | Module Efficiency (%) | 28.00% | 28.31% | 28.61% | 28.91% | 29.21% | 29.48% |

*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), ß (%/°C) | -0.26 |
| Temperature coefficient of Power (Pm), γ (%/°C) | -0.31 |
| NOCT (°C) | 43 ± 2 |
| Operating temperature range (°C) | -40 to 85 |
| Bifaciality Factor (%) | 80 ± 5 |

## MECHANICAL CHARACTERISTICS

| | |
|---|---|
| Length x Width x Thickness (L x W x T) | 1905 mm (L) x 1134 mm (W) x 33 mm (T) |
| Weight | 27.0 kgs |
| Solar Cells per Module (Units) / Arrangement | 120 cells / (10x6 \|\| 10x6) |
| Solar Cell Type & Size | TOPCon N-type Mono Bifacial,91x182mm |
| Front / Back Glass (Material / Thickness) | 2.0 mm Low Iron ARC Tempered glass |
| Encapsulate | PID Free & UV Resistant |
| Junction Box (Protection degree / Material ) | IP68 / Weatherproof PPO |
| 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.



WEL/E&PD/465-490/120/BiN-06/HC/01/20.12.2023