

# TOPCon

## N-Type Bifacial Dual Glass Modules Series

540 - 600 Wp • 144 Cells



### Product Warranty

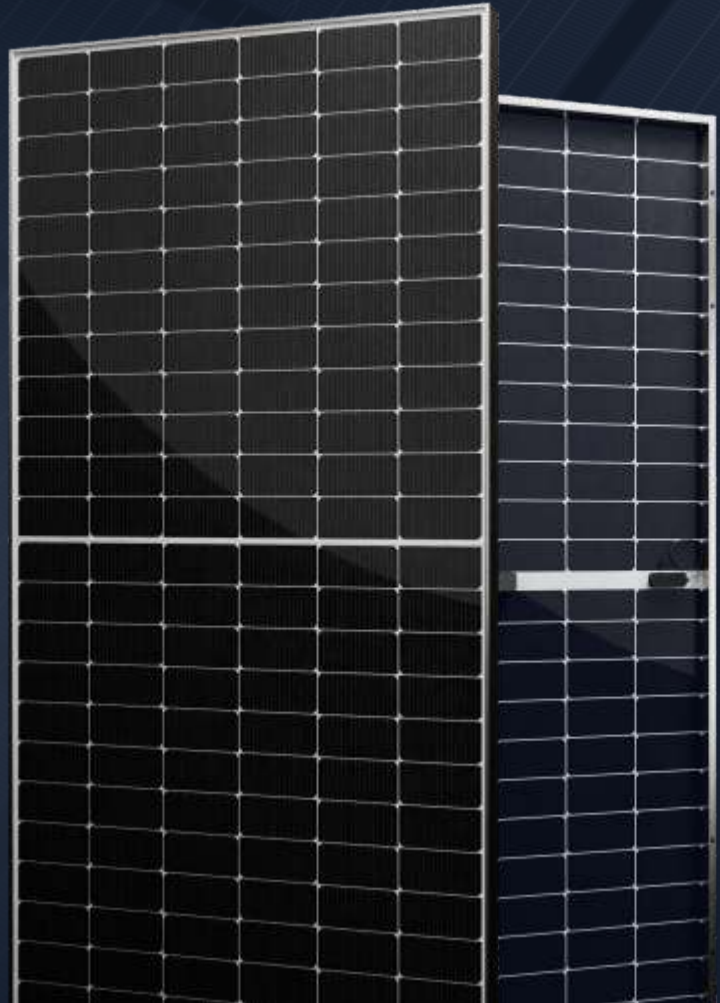
Ensuring long-term performance, reliability, and protection for your solar investment.



### Performance Warranty

Assuring sustained energy output, efficiency, and reliability for decades to come.

\*Module image shown is for illustrative purposes only.



**600+ WP**

Power Output up to



**23.23 %**

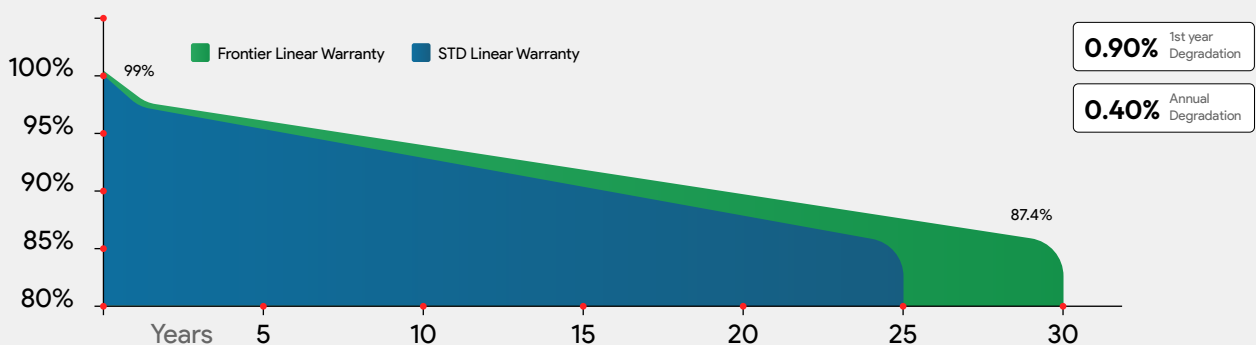
Efficiency up to



**0~+4.99 W**

Power Tolerance

## Linear Performance Warranty



## Highlights



### Up to 30% Additional Power Gain

When compared with conventional P-Type Module.



### Better Output in Low Irradiance

Delivers higher power output even during cloudy, foggy, or low-irradiance days.



### Bi-faciality Factor 80 ± 5%

Captures additional energy from the rear side for improved total power output.



### No LID Loss

Higher power generation



### Better Temperature Co-efficient

Maintains higher energy output even in hot ambient conditions.

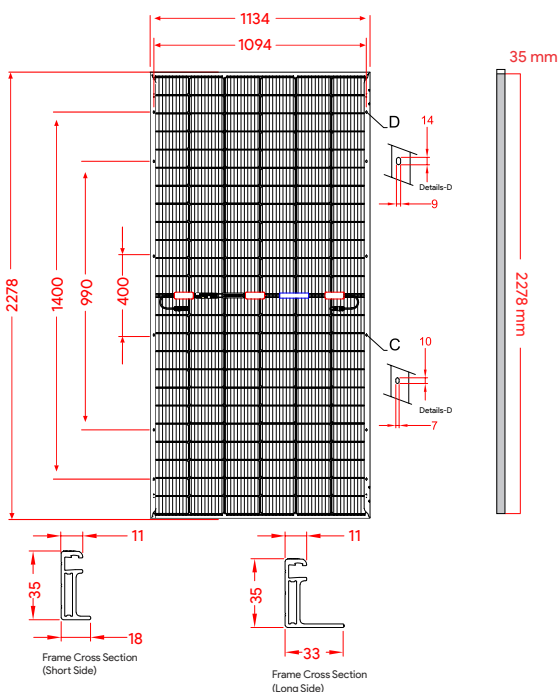


### Reliable Performance over time

Full-automated facility with latest technology, durability & reliability.

# Technical Data

## Dimensions in mm

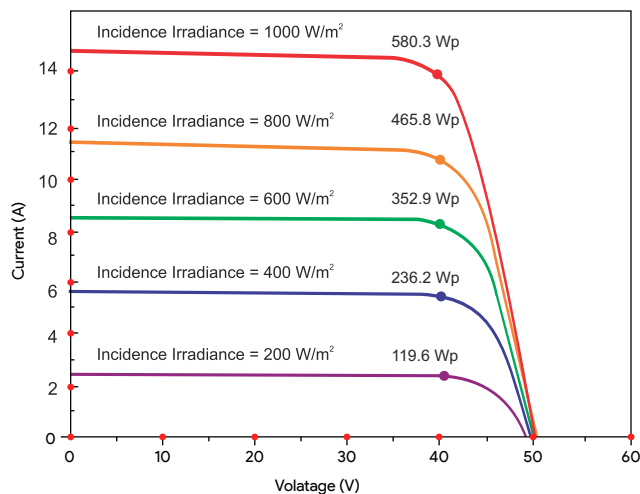


Note: All the dimensions are  $\pm 2$  mm Tolerance

## Multi Irradiance Curve

Bifacial Module @ 580 Wp

### I-V Curves



### Electrical Characteristics - All Data Measured to STC (Only Front)\*

Peak Power, Pmax (Wp)	540	545	550	555	560	565	570	575	580	585	590	595	600
Maximum Voltage, Vmpp (V)	41.88	42.00	42.12	42.24	42.44	42.61	42.77	42.94	43.12	43.27	43.45	43.61	43.83
Maximum Current, Imp (A)	12.91	12.99	13.07	13.15	13.20	13.26	13.33	13.39	13.45	13.52	13.58	13.64	13.69
Open Circuit Voltage, Voc (V)	50.12	50.29	50.46	50.63	50.80	50.97	51.10	51.30	51.50	51.70	51.90	52.10	52.30
Short Circuit Current, Isc (A)	13.61	13.69	13.77	13.85	13.93	14.02	14.10	14.19	14.28	14.36	14.45	14.53	14.61
Module Efficiency (%)	20.92	21.11	21.31	21.49	21.70	21.88	22.07	22.25	22.43	22.61	22.83	23.01	23.23

\*STC: Irradiance 1000 W/m<sup>2</sup>, cell temperature 25°C, Air mass AM 1.5 according to EN 60904-3. Average efficiency reduction is approx. 3% at 200 W/m<sup>2</sup> according to EN 60904-1. Except Pmp, all other parameter have tolerance of  $\pm 2\%$ , measurement uncertainty  $< 3\%$ .

### Temperature Coefficients & Operating Limits

T <sub>c</sub> of open circuit voltage ( $\beta$ )	-0.24% / °C
T <sub>c</sub> of short circuit current ( $\alpha$ )	+0.05% / °C
T <sub>c</sub> of power ( $\gamma$ )	-0.30% / °C
Maximum system voltage	1500 VDC (IEC & UL)
NOCT	45°C $\pm$ 2°C
Temperature Range	-40°C to +85°C

### BI-FACIAL Output - Backside Power Gain

10% Power Pmp	594	599.5	605	610.5	616	621.5	627	632.5	638	643.5	649	654.5	660
20% Power Pmp	648	654.0	660	666.0	672	678.0	684	690.0	696	702.0	708	714.0	720
30% Power Pmp	702	708.5	715	721.5	728	734.5	741	747.5	754	760.5	767	773.5	780

\* Bifacial gains depends on the power plant design & albedo of installation site. Measuring Tolerance:  $\pm 3\%$   
 \* Power Bifaciality = Pmax (Rear) / Pmax (Front) are tested under STC

### Packaging Configuration

Container	40' HQ	Pieces / Pallet	31
Pallets / Container	20	Pieces / Container	620

### Frame Profile Dimensions

Long	35x33 mm
Short	35x18 mm

### Mechanical Characteristics

External Dimensions	2278( $\pm 2$ mm) x 1134 ( $\pm 2$ mm) x 35( $\pm 2$ mm)
Weight	32 ( $\pm 3\%$ ) Kg
Solar Cells	10BB/16BB, TOPCon - Monocrystalline 91mm x 182mm $\pm 1$ mm
Front Glass	2 mm, Semi Tempered, HS Glass
Rear Cover	2 mm, Semi Tempered, HS Glass
Frame	Anodized Aluminium Alloy
Junction Box	3 Split, IP 68 Rated
Connector	Mc4 Compatible
Design Mechanical Load	5400 Pa For Snow Load, 2400 Pa Wind Load
Fire Performance	TYPE 39 (UL 61730) Or Class C (IEC 61730)
Output Cable	4.0 mm <sup>2</sup>   300 mm Length
Safety Factor for Mechanical Load	1.5
Maximum series fuse rating	30 A

#### Note:

- The specifications included in this datasheet are subject to change without notice.
- The Electrical data given here is for reference purpose only.
- Please confirm your exact requirements with the sales representative while placing your order.

Caution: Please read safety and installation instructions before using the product.

#### Warranty & Certifications

- 15 Years of Product Warranty.\*\*
- Performance Warranty: Power degradation  $< 1.0\%$  in first year,  $< 0.40\%$  / year in 2-30 years.\*\*
- Approvals & Certificates: IS 14286 : 2010/ IEC 61215 : 2005, IS/IEC 61730 (PART 1) : 2004 & IS/IEC 61730 (PART 2) : 2004

Note: Please read Frontier Energies Pvt. Ltd.'s warranty documents thoroughly.

#### Headquarter

### Frontier Energies Pvt. Ltd.

6th Floor, Wing C, Melange Tower, C219, Huda Techno Enclave Rd,  
Patrika Nagar, Madhapur, Hyderabad, Telangana 500081

+91 880044 3903

contact@frontierenergies.com

#### Factory

### Frontier Energies Pvt. Ltd.

B2- kothur logistic park, TSILC industrial development area, Plot 140, Kothur,  
Hyderabad, Telangana 509228

+91 880044 3903

contact@frontierenergies.com