



# TN 182\*210 435-460W

High efficiency bifacial modules

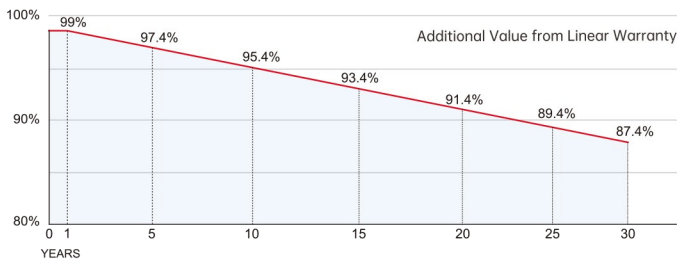
## • QUALITY SYSTEM

ISO9001 / ISO14001 / ISO45001

## • PRODUCT CERTIFICATION



## • WARRANTY



Guarantee on product material and workmanship



Linear power output warranty

## • TOPCON MODULE ADVANTAGE



Multi-Busbar technology



capacity



High module efficiency



Excellent low-light



Lower annual attenuation  
Longer warranty



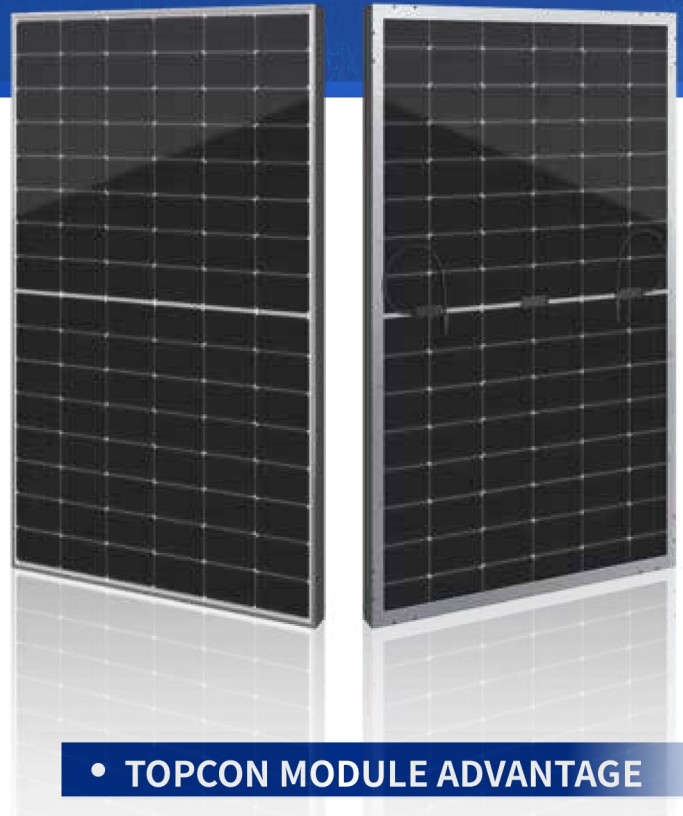
LCOE



Reduce hot spot effect



Higher bifaciality



WUXI TNSOLAR CO.,LTD.

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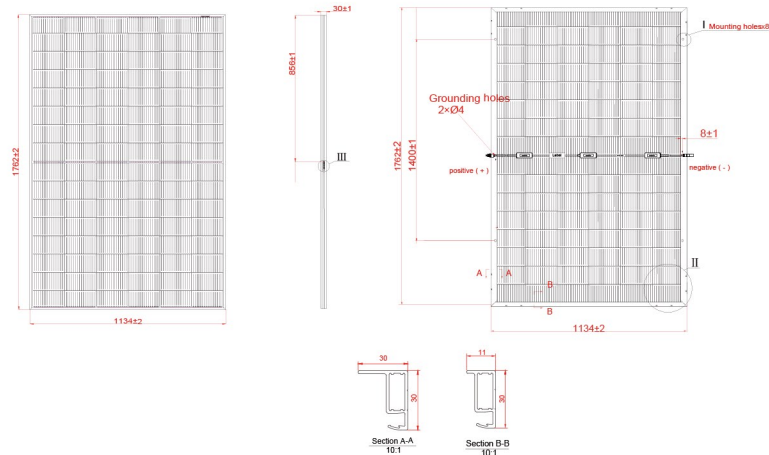
## Mechanical Specifications

External Dimension	1762 x 1134 x 30 mm
Weight	24.9 kg
Solar Cells	TOPCon 182 x 105mm (96pcs)
Front / Back Glass	2.0mm AR coating semi-tempered glass, low iron
Frame	Anodized aluminium alloy
Junction Box	IP68, 3 diodes
Output Cables	4.0mm <sup>2</sup> , 250mm(+)/350mm(-) or Customized Length

## Packing Configuration

Container	20'GP	40'HQ
Pieces per Pallet	36	36
Pallets per Container	6	26
Pieces per Container	216	936

## Technical drawing



## Electrical Characteristics

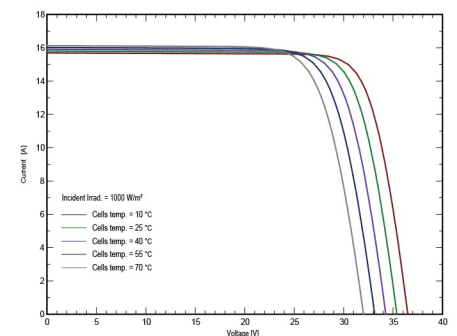
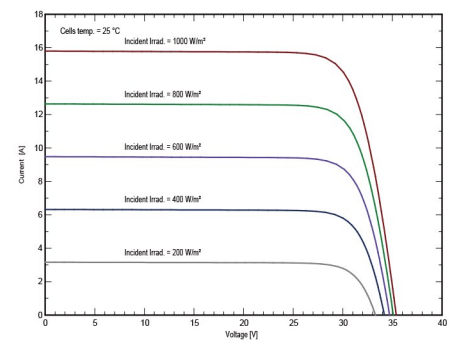
Module Type	435		440		445		450		455		460	
	Front STC	Front BNPI	Front STC	Front BNPI	Front STC	Front BNPI	Front STC	Front BNPI	Front STC	Front BNPI	Front STC	Front BNPI
Maximum Power -P <sub>mp</sub> (W)	435	482	440	488	445	493	450	499	455	504	460	510
Open Circuit Voltage -V <sub>oc</sub> (V)	35.18	35.26	35.38	35.46	35.58	35.66	35.78	35.86	35.98	36.06	36.18	36.26
Short Circuit Current -I <sub>sc</sub> (A)	15.75	17.45	15.80	17.51	15.85	17.56	15.90	17.62	15.95	17.67	16.00	17.73
Maximum Power Voltage -V <sub>mp</sub> (V)	29.21	29.29	29.41	29.49	29.61	29.69	29.81	29.89	30.01	30.09	30.21	30.29
Maximum Power Current -I <sub>mp</sub> (A)	14.90	16.46	14.97	16.53	15.03	16.61	15.10	16.68	15.17	16.75	15.23	16.83
Module Efficiency STC-η <sub>m</sub> (%)	21.77		22.02		22.27		22.52		22.77		23.02	
Power Tolerance(W)	(0,+4.99)											

STC: Irradiance 1000 W/m<sup>2</sup> module temperature 25°C AM=1.5 Power measurement tolerance: +/-3%; Voltage measurement tolerance: +/-3%; Current measurement tolerance: +/-4%  
 BNPI: front 1000 W/m<sup>2</sup> rear 135 W/m<sup>2</sup> Power measurement tolerance: +/-3%; Voltage measurement tolerance: +/-3%; Current measurement tolerance: +/-4%

## Rear Side Power Gain(450W)

Power Gain	10%	15%	20%	25%	30%
Maximum Power -P <sub>mp</sub> (W)	495	518	540	563	585
Open Circuit Voltage -V <sub>oc</sub> (V)	35.78	35.78	35.78	35.78	35.78
Short Circuit Current -I <sub>sc</sub> (A)	17.49	18.29	19.08	19.88	20.67
Maximum Power Voltage -V <sub>mp</sub> (V)	29.81	29.81	29.81	29.81	29.81
Maximum Power Current -I <sub>mp</sub> (A)	16.61	17.37	18.12	18.88	19.63

## I-V Curve



## Temperature Ratings

Pmax Temperature Coefficient	-0.29 %/°C
Voc Temperature Coefficient	-0.25 %/°C
Isc Temperature Coefficient	+0.046 %/°C

## Application Conditions

Maximum System Voltage	1500V DC
Maximum Series Fuse Rating	30 A
Operating Temperature	-40~+85 °C
Nominal Operating Cell Temperature	45±2 °C
Bifaciality	80%±5%
Mechanical Load	Front side 5400 Pa / Back side 2400 Pa



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