



**GGSP-610-650W**

610-650W-182M/156TB

**N-TOPCon**

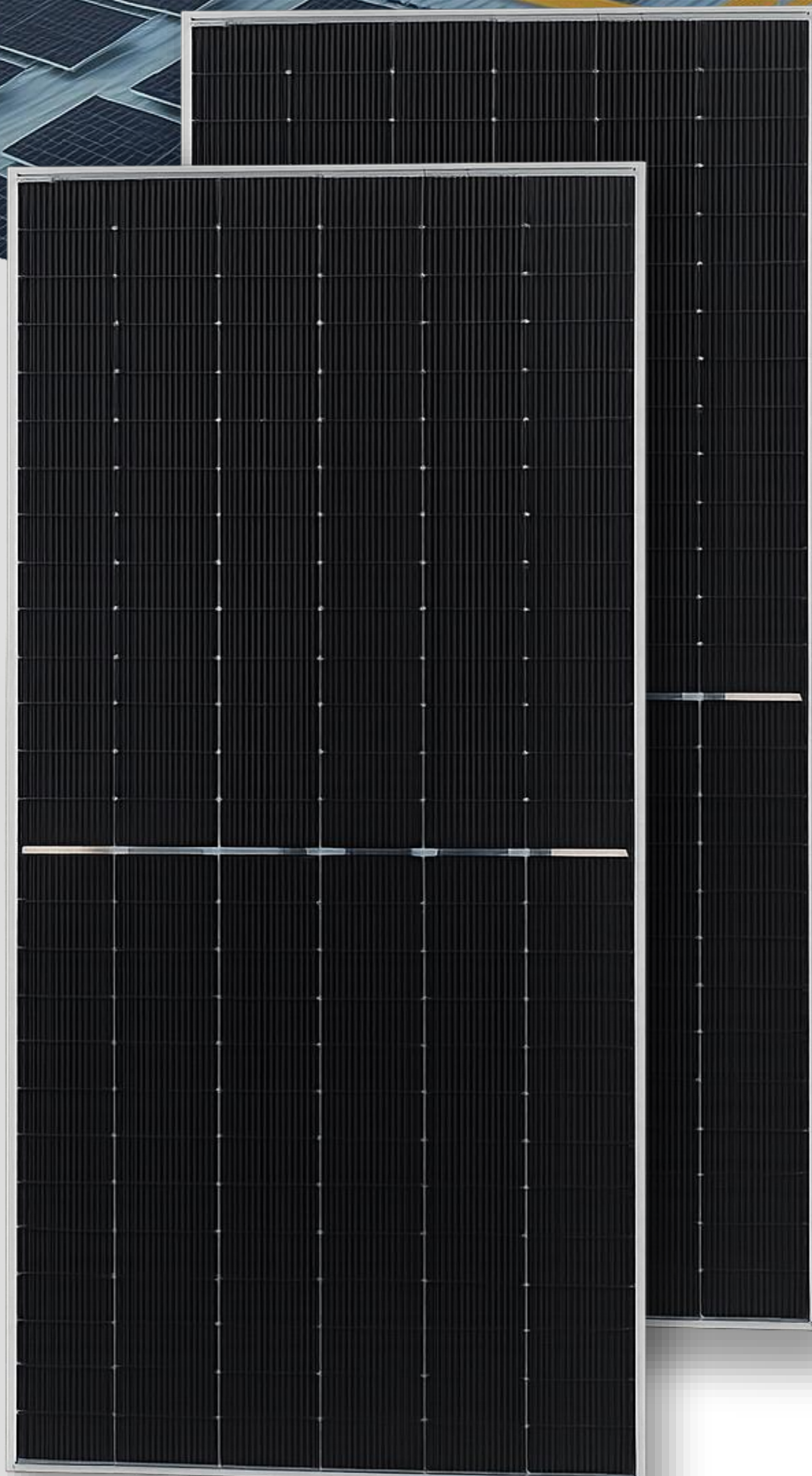
Bifacial Monocrystalline Module

**23.25%**

Max. Efficiency

**1500V DC**

Max. System Voltage



# GGSP-610-650W

## 610-650W-182M/156TB

### N-TOPCon

#### Bifacial Monocrystalline Module

- **Light Redirecting Film:** GO GREEN TOPCON modules use gap Light Redirecting Film technology to ensure the bifaciality and reliability of the module, while effectively increasing the power performance.
- **No-Destructive Cutting:** GO GREEN cell cutting uses NDC (non-destructive) cutting technology. The cutting surface is smooth, avoiding the loss of the mechanical structure of the cells and ensuring sufficient current.
- **Junction Box Laser Welding Technology:** GO GREEN uses the high energy density and precise positioning control capabilities of laser technology to achieve high-quality welding. It can accurately control the junction box welding position and welding time to ensure welding quality and reliability, improving module safety.

**2465×1134×35/30**

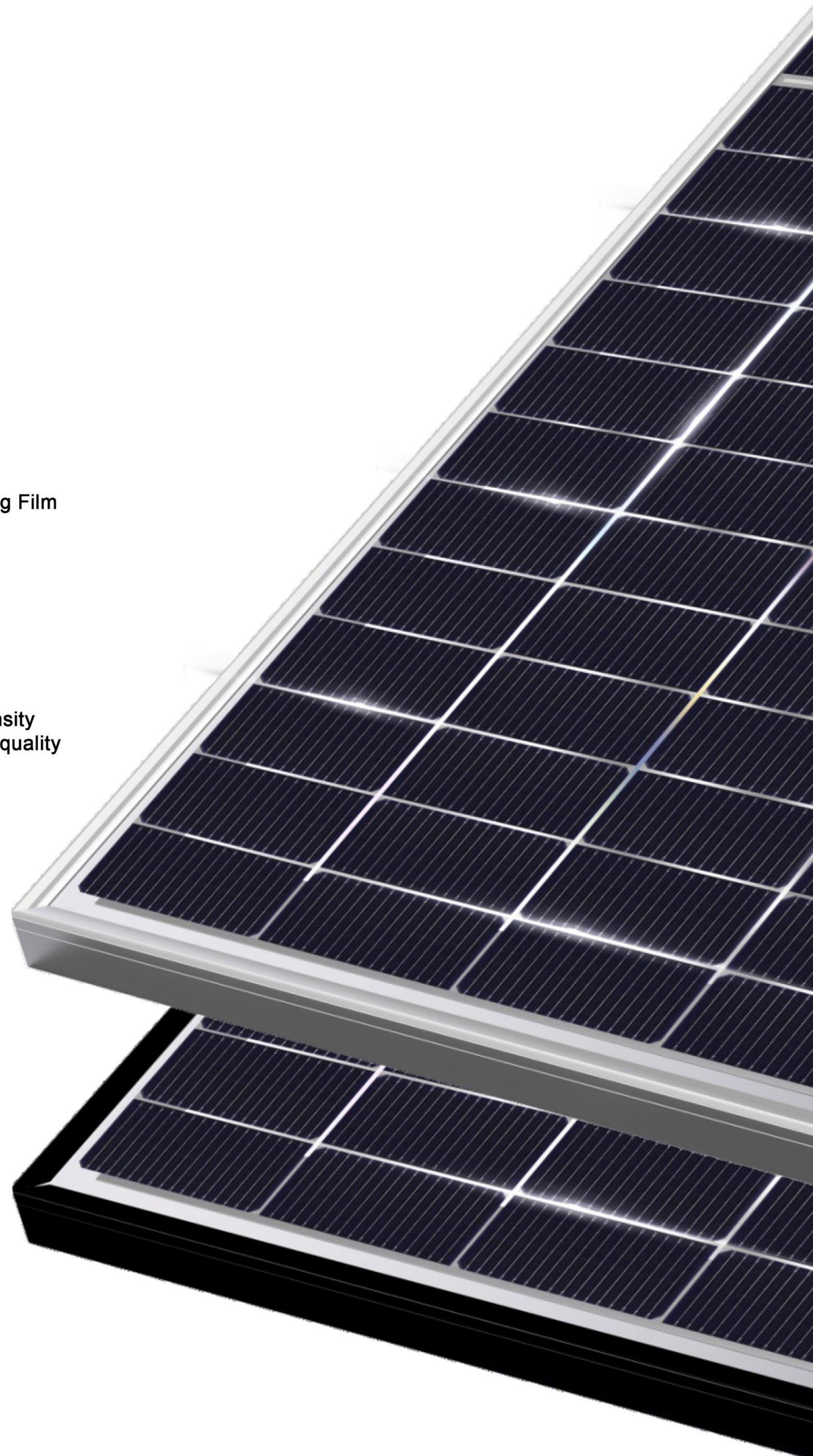
Dimensions(mm)

**156 CELL**                      **610-650Wp**

Mono TOPCon                      Power output

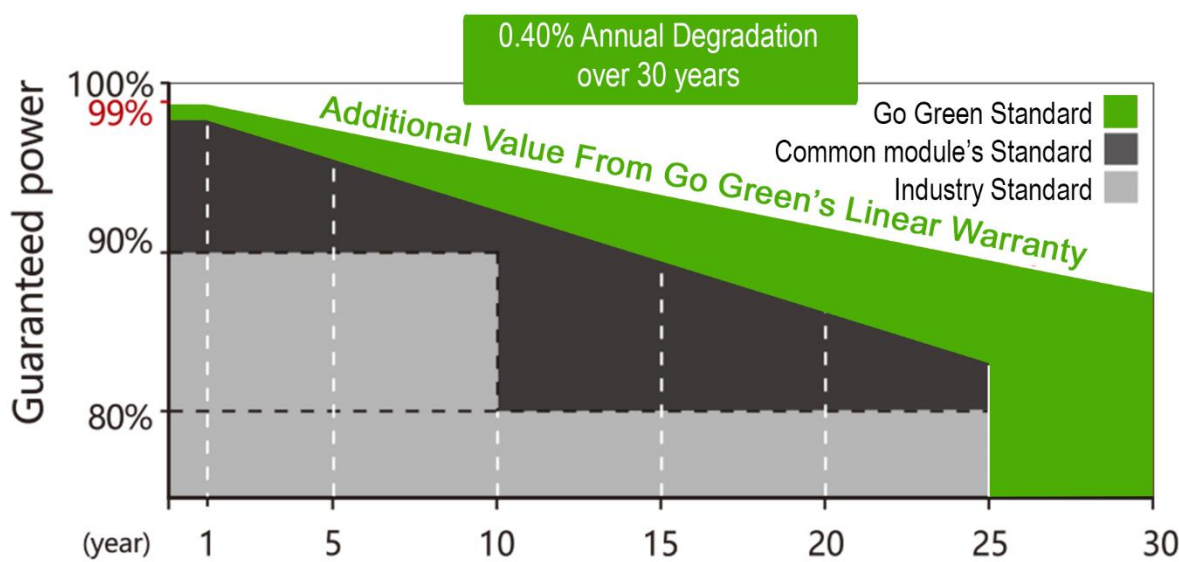
**1500V DC**                      **23.25%**

Max system voltage                      Max. efficiency




#### LINEAR PERFORMANCE WARRANTY


15-year product warranty / 30-year linear power warranty




IEC61215/IEC61730/IEC61701/IEC62716/WEEE De93315506





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**Higher Power Output**  
Module power increases by 5-25% generally, bringing significantly lower LCOE and higher IRR. 0-5w positive tolerance output warranty.
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**Multi Busbar Technology**  
By improving optical utilization rate, power increases by 2~3% and efficiency increases by 0.4~0.6%.
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**PID Resistance**  
Excellent Anti-PID performance guarantee via optimized mass-production process and material control.

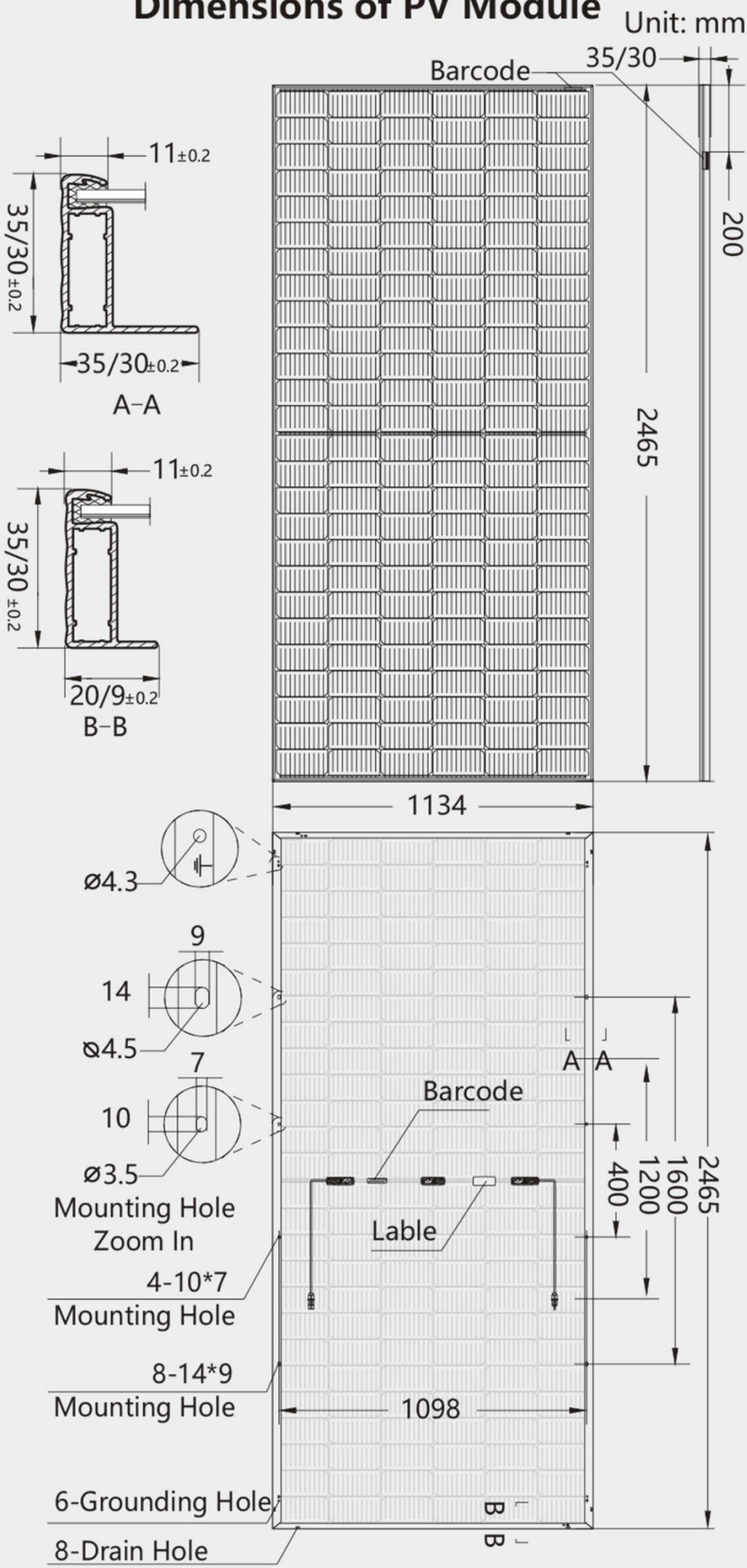
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**Low-light Performance**  
Excellent performance in low light.
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**Durability Against Extreme Environmental Conditions**  
High salt mist and ammonia resistance certified by TUV NORD.
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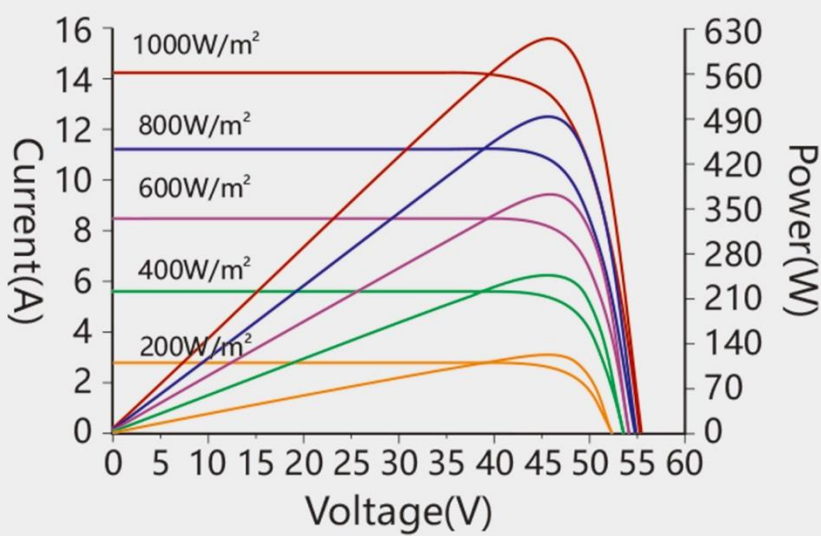
**2 EL Full Inspection**  
Dual-stage 100% EL Inspection.

**Dimensions of PV Module**



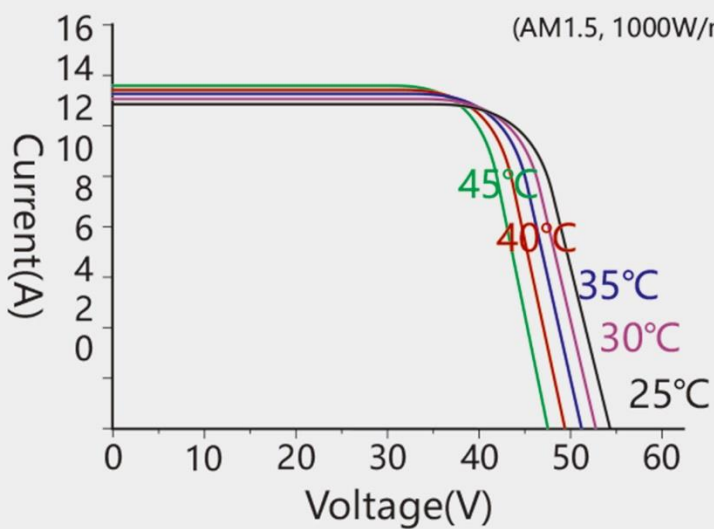
**I-V characteristics at different irradiances**

Cells temp.=25°C



**I-V characteristics at different temperatures**

(AM1.5, 1000W/m)



**ELECTRICAL CHARACTERISTICS (STC\*)**

Rated Power in Watts-Pmax(Wp)	610	615	620	625	630	635	640	645	650
Open Circuit Voltage-Voc(V)	56.81	56.98	57.15	57.32	57.49	57.67	57.84	58.01	58.19
Short Circuit Current-Isc(A)	13.58	13.65	13.72	13.78	13.85	13.92	13.99	14.06	14.13
Max. Power Voltage-Vmpp(V)	47.50	47.64	47.79	47.93	48.07	48.22	48.36	48.51	48.65
Max. Power Current-Impp(A)	12.85	12.91	12.98	13.04	13.11	13.17	13.24	13.31	13.37
Module Efficiency(%)	21.82	22.00	22.18	22.36	22.54	22.72	22.89	23.07	23.25
Maximum system voltage	1500V DC								
Fuse Rating(A)	30								
Temperature coefficient Pmax	-0.30%/°C								
Temperature coefficient Isc	0.046%/°C								
Temperature coefficient Voc	-0.25%/°C								
Refer. Bifacial Factor	80±5%								

\*STC: Irradiance 1000W/m², module temperature 25°C, AM=1.5

**WORKING CHARACTERISTICS (NOCT\*)**

Rated Power in Watts-Pmax(Wp)	455	459	462	466	470	474	478
Open Circuit Voltage-Voc(V)	52.41	52.54	52.66	52.79	52.93	53.15	53.28
Short Circuit Current-Isc(A)	11.26	11.33	11.39	11.46	11.52	11.58	11.64
Max. Power Voltage-Vmpp(V)	42.23	42.35	42.46	42.57	42.68	42.79	42.90
Max. Power Current-Impp(A)	10.77	10.83	10.89	10.95	11.01	11.07	11.13
Power tolerance	0~+3%						
NOCT	45°C±2°C						
Operating Temperature	-40°C~85°C						

\*NOCT: Irradiance 800W/m², ambient temperature 20°C, wind speed 1m/s

**Electrical characteristics with different rear side power gain**

	Pmax/W	Voc/V	Isc/A	Vmpp/V	Impp/A
5%	683	58.19	14.84	48.65	14.04
10%	715	58.19	15.54	48.65	14.71

The additional gain from the rear side compared to the power of the front side at the standard test condition. It depends on mounting (structure, height, tilt angle etc.) and albedo of the ground.

**MECHANICAL CHARACTERISTICS**

Number of cells	156pcs	Type of frame	Anodized Aluminum Alloy
Type of cell	N-TOPCon Mono	Size of module(mm)	2465×1134×35/30
Thickness of glass(mm)	2.0	Weight(kg)	34
Junction box	IP68, 1500V DC, 3 Diodes	Cables/connectors	4.0mm², MC4 compatible
Length of Cable	+300mm/-200mm	Length can be customized (connector included)	

**PACKAGING CONFIGURATION**

Height of Modules (mm)	35	30
Number of Modules Per Pallet	31	36
Packaging Box Dimensions (l×w×h) (mm)	2485×1120×1260	1260×1120×2595
Box Gross Weight (kg)	1080	1250
Number of Modules Per 40ft (HQ) Container	496	576
Number of Pallets Per 40ft (HQ) Container	16	16

CAUTION: READ SAFETY AND INSTALLATION INSTRUCTIONS BEFORE USING THE PRODUCT  
Specifications included in this datasheet are subject to change without notice.