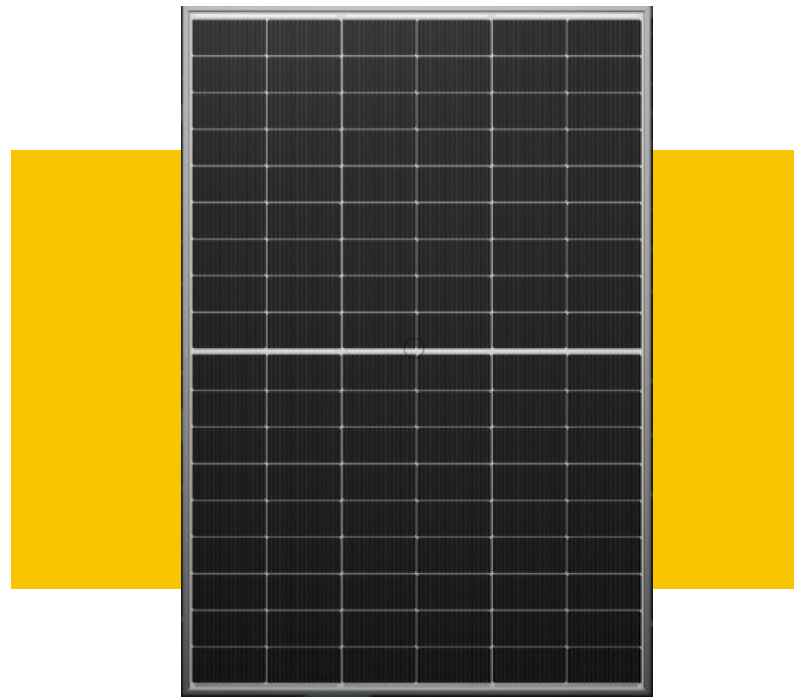


MSMDxxxM10NR-108BG

# 435-465W

N-Type cells (TOPCon) Cut Bifacial  
Dual Glass Module Black Frame



## Product Advantages



### 16BB half-cut cell technology

New circuit design, lower internal current, lower Rs loss Ga doped wafer, attenuation <1% (1st year) / ≤0.40% (Linear)



### Significantly lower the risk of hot spot

Special circuit design with much lower hot spot temperature



### Lower LCOE

2% more power generation, lower LCOE



### Excellent Anti-PID performance

2 times of industry standard Anti-PID test by TUV SUD



### IP68 junction box

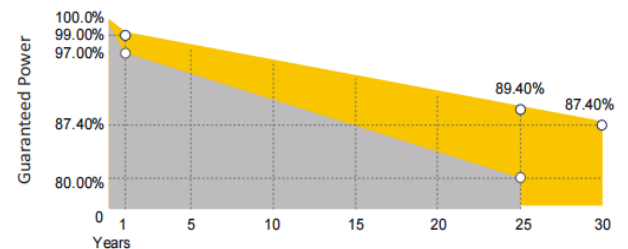
High waterproof & dustproof level

**23.3%**  
Module efficiency

**465W**  
Highest power output

## Performance Warranty

● Standard Module ● MSMD TOPCon Module



**-1.00%**  
First year power degradation

**-0.40%**  
Annual degradation

**15**  
Years

Materials and workmanship warranty

**30**  
Years

Linear power warranty

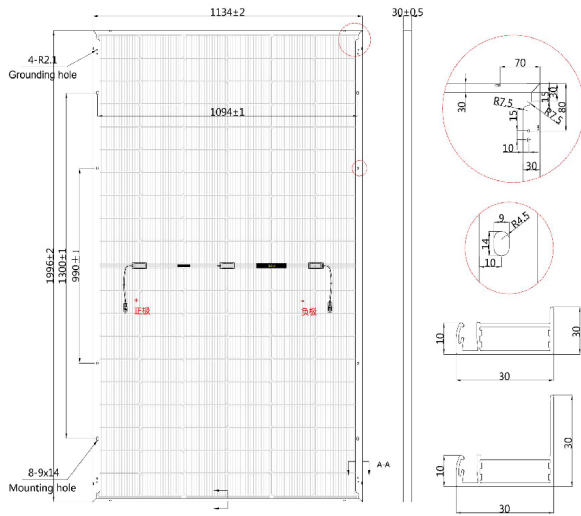
## Product Certification



# MSMDxxxM10NR-108BG

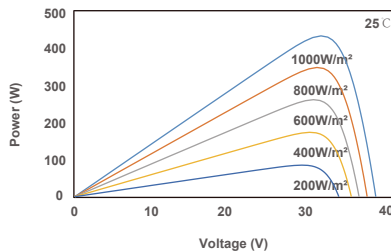
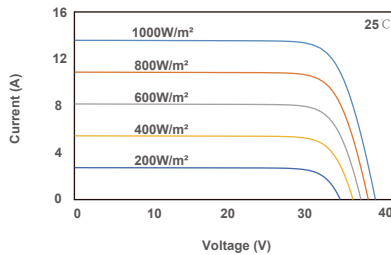
## Engineering Drawings

Unit: mm



### I-V CURVE

Current-Voltage & Power-Voltage Curve (435)



## Temperature Characteristics

Nominal Operating Cell Temp. (NOCT)	42 °C ± 2 °C
Temperature Coefficient of Pmax	-0.29%/ °C
Temperature Coefficient of Voc	-0.25%/ °C
Temperature Coefficient of Isc	0.046%/ °C

## Safety & Warranty

Safety Class	Class II
Product Warranty	15 yrs Workmanship
Performance Warranty	30 yrs Linear Warranty*

\*1st year 99%, after 2nd year 0.40% annual degradation to year 30.

## Electrical Characteristics (STC\*)

MSMDxxxM10NR-108	435	440	445	450	455	460	465
Maximum Power (Pmax)	435W	440W	445W	450W	455W	460W	460W
Module Efficiency (%)	21.8%	22.0%	22.3%	22.5%	22.8%	23.0%	23.3%
Optimum Operating Voltage (Vmp)	32.6V	32.8V	33.0V	33.2V	33.4V	33.6V	33.8V
Optimum Operating Current (Imp)	13.35A	13.42A	13.49A	13.56A	13.63A	13.70A	13.76A
Open Circuit Voltage (Voc)	39.1V	39.3V	39.5V	39.7V	39.9V	40.1V	40.3V
Short Circuit Current (Isc)	13.84	13.93	14.01	14.10	14.18	14.27	14.35
Operating Module Temperature	-40 to +85 °C						
Maximum System Voltage	DC1500V (IEC)						
Maximum Series Fuse	25A						
Power Tolerance	0~+5W						

\*STC: Irradiance 1000 W/m², cell temperature 25 °C, AM=1.5, Tolerance of Pmax is within +/- 3%.

## NMOT\*\*

Maximum Power (Pmax)	327W	331W	335W	339W	343W	347W	351W
Optimum Operating Voltage (Vmp)	30.3V	30.5V	30.7V	30.9V	31.1V	31.3V	31.5V
Optimum Operating Current (Imp)	10.79A	10.85A	10.91A	10.97A	11.03A	11.09A	11.14A
Open Circuit Voltage (Voc)	37.2V	37.4V	37.6V	37.8V	38.0V	38.2V	38.4V
Short Circuit Current (Isc)	11.17A	11.25A	11.32A	11.40A	11.47A	11.54A	11.61A

\*\*NMOT: Irradiance 800W/m², ambient temperature 20 °C, AM=1.5, wind speed 1m/s

## Mechanical Characteristics

Cell Type	N-Type TOPCon Monocrystalline
Cell Connection	108 (6 × 18)
Module Dimension	1762*1134*30 mm
Weight	25.5 kg
Junction Box	IP68
Output Cable	350 mm or customized length
Connectors Type	MC4 compatible
Frame	30mm Anodised aluminum alloy
Front Load	5400 Pa
Rear Load	2400 Pa
Glass Thickness	2.0 mm AR Coating Tempered Glass

## Shipping Configurations

	HC
Container Length	40'
Pallets Per Container	26
Modules Per Pallet (pcs)	36
Modules Per Container (pcs)	936