



## G-12R SERIES

# 595W to 650W

**CLEAR VISION**  
**CLEAN ENERGY**



### High Efficiency

Excellent Module Conversion Efficiency of up to 23.24%



### Better Weak Light Performance

Delivers higher power output even in low-light conditions such as cloudy, rainy, or foggy days.



### 5%-10% Additional Power Generation

More than 5%-10% additional power gain compared to the regular modules.



### High Saving

Lower LCOE, reduced BOS cost, shorter payback time.



### PID Resistance

Excellent Anti-PID Performance Guarantee.



### ZERO LID (Light Induced Degradation)

Excellent anti-LeTID. Low power degradation, high energy yield.



IEC-61701, IEC-61853-PART-1, IEC-61853-PART-2 IAM& LETID,

IS -16170 -PART-1, IEC-62716, IEC-62804, IEC 60905, IEC-61215, IEC-63342, IEC 61701, IEC 62716



12 Years Warranty For  
Materials And Processing



30 Years Warranty For  
Linear Power Output



BIS Certified



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## CERTIFICATIONS

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# G-12R SERIES TOPCON TECHNICAL DATA

ELECTRICAL PERFORMANCE [ Note : Power tolerance: 0 ~ +4.99 W. Power measurement uncertainty < ±3%. Average value of NOCT: 45.08 ± 2 °C ]

ELECTRICAL CHARACTERISTICS	MSE595WC	MSE600WC	MSE605WC	MSE610WC	MSE615WC	MSE620WC	MSE625WC
	STC						
Nominal Maximum Power (Pmax)	595 W	600 W	605 W	610 W	615 W	620 W	625 W
Optimum Operating Voltage (Vmp)	39.29 V	39.46 V	39.61 V	39.78 V	39.97 V	40.17 V	40.37 V
Optimum Operating Current (Imp)	15.15 A	15.21 A	15.28 A	15.34 A	15.39 A	15.44 A	15.49 A
Open Circuit Voltage (Voc)	47.50 V	47.70 V	47.90 V	48.10 V	48.30 V	48.50 V	48.70 V
Short Circuit Current (Isc)	15.90 A	15.95 A	16.00 A	16.05 A	16.10 A	16.15 A	16.20 A
Module Efficiency	22.03 %	22.21 %	22.40 %	22.58 %	22.77 %	22.95 %	23.14 %

## BIFACIAL OUTPUT - BACKSIDE POWER GAIN @STC\* [ Bifaciality Factor: 80% ± 10% ]

[Note: The bifacial gain depends on the power plant design and site conditions. Electrical component ratings should be selected as per actual bifacial gain at the site (module currents indicated below).]

5% Nominal Maximum Power (Pmax)	625	630	635	641	646	651	656
Module Short Circuit Current / Efficiency	23.13	23.32	23.52	23.71	23.91	24.10	24.29
10% Nominal Maximum Power (Pmax)	684	690	696	702	707	713	719
Module Short Circuit Current / Efficiency	25.33	25.54	25.76	25.97	26.18	26.40	26.61
25% Nominal Maximum Power (Pmax)	744	750	756	763	769	775	781
Module Short Circuit Current / Efficiency	27.53	27.77	28.00	28.23	28.46	28.69	28.92

## MECHANICAL SPECIFICATIONS

Dimensions	(L) 2382 X (W) 1303 X (H) 35 mm
Weight(kg)	34.0 kg
Cell Type	G-12R Series
Frame	Silver Anodized Aluminum Alloy
Junction Box	IP 68 certified, 3 diodes junction box
Output Cable	Solar cable 400 mm length or customized length, 4 mm <sup>2</sup>
Connectors Type	Compatible with MC4 connectors
Front Load	Mechanical Load 5400 Pa (Snow Load)
Application Class Rating	Class A
Safety Class Rating	Class II
Fire Safety Rating	Class C (Type 1)
Rear Load	2400 Pa (Wind Load)

## PERMISSIBLE OPERATING CONDITIONS

Temperature range	-40°C to +85°C
Maximum System Voltage	1500 VDC
NOCT	45 ± 2°C
Hail Resistance	Maximum diameter of 25 mm with velocity 23/m/s
Maximum Series Fuse Rating	30A
Bifaciality Factor	80 ± 5%

## TEMPERATURE COEFFICIENTS

Current $\alpha$ (Isc) :	-0.04%/°C
Voltage $\beta$ (Voc) :	-0.04%/°C
Power $\gamma$ (Pmax) :	-0.280%/°C

## PACKAGING CONFIGURATION

Container	40' HQ
Modules per Pallet	36
Pallets per Container	20
Modules per Container	720

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

**Warranty:** Linear performance warranty for 30 years, with a degradation of up to 1% in the first year and 0.4% per year from year 2 to year 30. Please read the MACWIN'S warranty documents thoroughly.

**Disclaimer:** Specifications provided in this datasheet are subject to change without prior notice due to continuous innovation in product development and R&D activities.

MACWIN SOLAR PVT. LTD. reserves the right to make any adjustments to the information described here. The dataset contained in this specification does not form a representative sample of a single module's data. @T@C Apply.

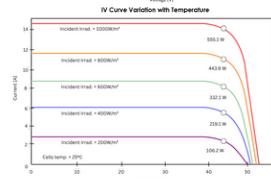
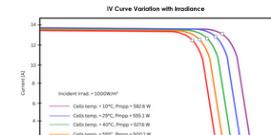
This data was reviewed and updated as of 28th August 2025

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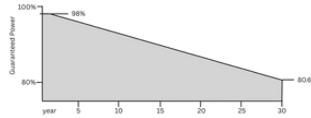
**MACWIN**  
SOLAR ENERGY

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## REFERENCE IV CURVE DETAIL:



## LINEAR PERFORMANCE WARRANTY:



## DIMENSIONS:

FRONT VIEW

SIDE VIEW

