



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

**India's Leading
Solar Panel Manufacturers**

ABOUT MACWIN

Powering India's Tomorrow—Today.

Macwin Solar Energy Pvt. Ltd. is one of India's fastest-growing solar panel manufacturers. We drive the clean energy shift with precision-engineered solar PV modules for homes, industries, farms, and large-scale projects. Founded in 2021 by two brothers Bharat Budheliya and Hardik Budheliya, Macwin began its journey in a 10,000 sq. ft. facility. In just a few years, it has expanded into a 2,75,000 sq. ft. advanced manufacturing plant with an annual production capacity of 1GW (on track to 2GW).

The state-of-the-art factory integrates AI-driven production lines and stringent quality control systems, ensuring every solar module meets global standards of performance and durability. Macwin specializes in a broad spectrum of solar PV technologies from cost-effective and high-efficiency Mono PERC modules to next generation N-Type TOPCon panels and large-format G-12R series modules. Every product reflects our mission to make clean energy accessible for all, empowering residential and commercial customers alike with sustainable, bill-reducing power solutions.

At Macwin, solar isn't just a product.
It's a promise of a brighter, bill-free tomorrow.



MILESTONE



2021

Macwin Solar was founded to advocate for renewable energy.

2022

Commenced operations with a Polycrystalline and a 25 MW factory capacity.

2023

On track to reach a 10BB 100 MW production capacity.

2024

Upgraded to TOPCon Glass-to-Glass within our 1 GW line enhancing efficiency and tech leadership.

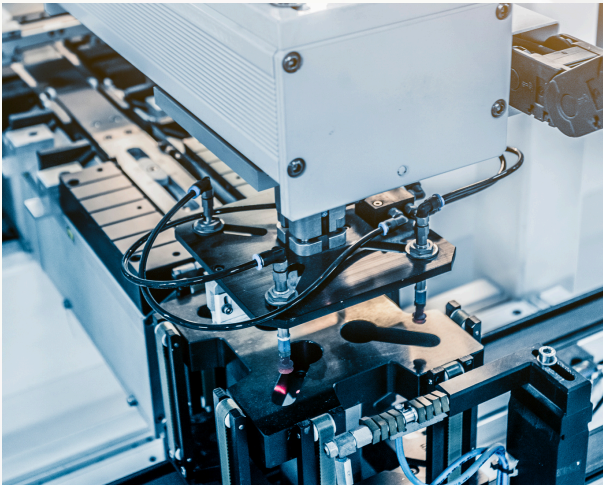
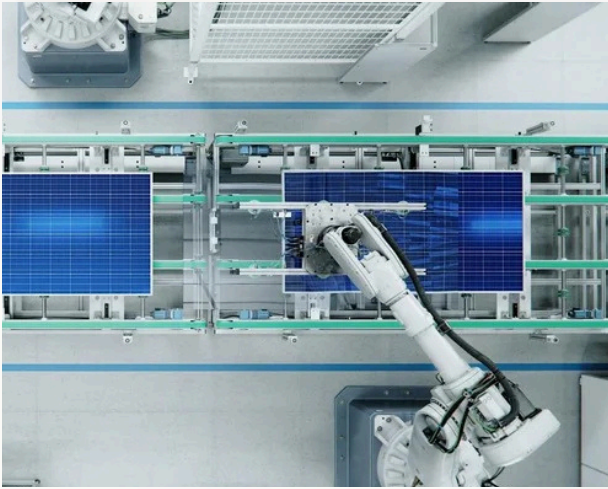
2025

Scaling up to 2 GW with TOPCon Glass-to-Glass and G-12R technology, accelerating our vision to lead India's next-gen solar manufacturing revolution.

2026

Initiated plans for an in house solar cell production line.

OUR FACILITIES



As of 2024, Macwin operates a sprawling 2,75,000 sq. ft. integrated solar panel production facility in Gujarat. This state-of-the-art plant is fitted with advanced machinery and AI-enabled precision lines, ensuring that each panel is built with uncompromising quality and efficiency. We maintain in-house reliability testing laboratories where every module undergoes multi-stage checks for durability and performance. The facility's optimized processes and strategic location enable fast delivery of orders across India, providing customers with quick turnaround and dependable service.

OUR VISION, MISSION



VISION



Our vision is rooted in transparency, quality, integrity, and service. We strive to become India's most trusted and recognized solar brand, powering rooftops, industries, and communities across every state. By upholding our core values in every innovation and partnership, we aim to lead the nation's clean energy revolution and light up every corner of India with sustainable solar power.

MISSION



Our mission is to contribute to a net-zero carbon future and support global renewable energy goals by accelerating the adoption of clean, reliable solar power. We are committed to making solar energy accessible and affordable for every home and business, delivering high-efficiency PV modules built with cutting-edge automation and world-class quality. Through continuous innovation and a customer-centric approach, we empower communities and industries to harness the sun's energy for a greener, more prosperous tomorrow.





P-TYPE M10

525W to 560W

N-TYPE TOPCON

570W to 620W

TOPCON G-12R

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.



ZERO LID (Light Induced Degradation)

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



PID Resistance

Excellent Anti-PID
Performance Guarantee.



12 Years Warranty For
Materials And Processing



30 Years Warranty For
Linear Power Output



BIS Certified



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www.macwinsolarenergy.com

Head Office: 403, Apple Square, Gajera School Char Rasta, Katargam, Surat, Gujarat - 395004, India | Ph. +91 87808 54965

Factory Unit: Plot-56, Olpad GIDC, B/H Vikas Petrol Pump, Surat, Olpad Rd, Olpad, Gujarat - 394540 | Ph. +91 95108 59606

P-TYPE M10 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	MSE525WC		MSE530WC		MSE535WC		MSE540WC		MSE545WC		MSE550WC		MSE555WC		MSE560WC	
	STC NOCT		STC NOCT		STC NOCT		STC NOCT		STC NOCT		STC NOCT		STC NOCT		STC NOCT	
Nominal Maximum Power (Pmax)	525 W	388.64	530 W	392.35	535 W	396.05	540 W	399.75	545 W	403.45	550 W	407.15	555 W	410.85	560 W	414.55
Optimum Operating Voltage (Vmp)	41.28 V	38.50 V	41.51 V	38.71 V	41.75 V	38.94 V	41.97 V	39.14 V	42.20 V	39.36 V	42.42 V	39.56 V	42.64 V	39.77 V	42.89 V	40.00 V
Optimum Operating Current (Imp)	12.72 A	10.08 A	12.77 A	10.12 A	12.82 A	10.16 A	12.86 A	10.16 A	12.92 A	10.24 A	12.97 A	10.27 A	13.02 A	10.31 A	13.06 A	10.35 A
Open Circuit Voltage (Voc)	50.02 V	46.78 V	50.21 V	46.96 V	50.40 V	47.13 V	50.61 V	47.33 V	50.80 V	47.51 V	50.90 V	47.60 V	51.18 V	47.86 V	51.37 V	48.04 V
Short Circuit Current (Isc)	13.20 A	10.63 A	13.24 A	10.66 A	13.28 A	10.69 A	13.33 A	10.73 A	13.36 A	10.76 A	13.39 A	10.78 A	13.44 A	10.82 A	13.49 A	10.86 A
Module Efficiency	20.33 %		20.53 %		20.73 %		20.92 %		21.12 %		21.31 %		21.50 %		21.70 %	

STACKING STANDARD	20FT	40FT
No. of Modules per Container:	336	616
No. of Pallets per Container:	12	22
No. of Modules per Pallet/Weight:	28 Nos/840 Kg	
Pallet Dimensions in mm:	2320(L) *1000(w)*1275(H)	

MECHANICAL SPECIFICATIONS	
Dimensions	(L) 2278 mm x (w) 1134 mm x (H) 35 mm
Weight(kg)	~28 Kg
Solar cells	144 pcs monocrystalline Silicon (PERC), Multi BB
Frame	Silver Anodized Aluminium Alloy
Backside	UV protected reflective backsheet
Encapsulate	Ultra - clear PID free EVA (Ethylene-Vinyl-Acetate)
Solar Glass	3.2 mm, High Transmission, AR Coated Tempered Glass
Junction Box	IP 68 certified, 3 diodes, Split junction box
Series Fuse Rating	25 A
Cable	Solar cable 400 mm length, 4 mm ²
Connectors	MC4 compatible connectors
Application Class Rating	Class A
Safety Class Rating	Class II
Fire Safety	Class C (Type 1)
Surface load	Snow load 5400 Pa, Wind load 2400 Pa

MAXIMUM OPERATING CONDITIONS	
Temperature range	-40°C to +85°C
Maximum System Voltage	1500 VDC
NOCT	45 ± 2°C
Hail Resistance	Max. diameter of 25mm with velocity 23m/s

TEMPERATURE COEFFICIENTS	
Current α (Isc) :	0.048%/°C
Voltage β (Voc) :	-0.28%/°C
Power γ (Pmax) :	-0.34%/°C

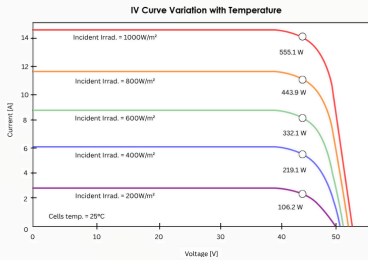
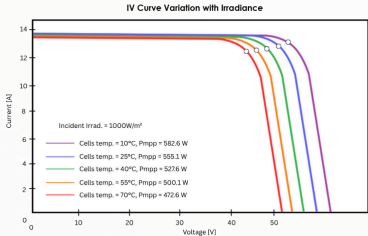
PACKAGING CONFIGURATION	
Number of Modules per Pallet	31
No of pallet	20
No of module, 40ft HC container	620

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

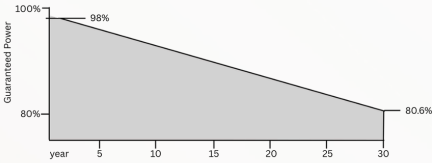
Warranty: Linear performance warranty for 30 years, with a degradation of up to 1% in the first year and 0.4% per year from year 2 to year 30. Please read the MACWIN’S warranty documents thoroughly.

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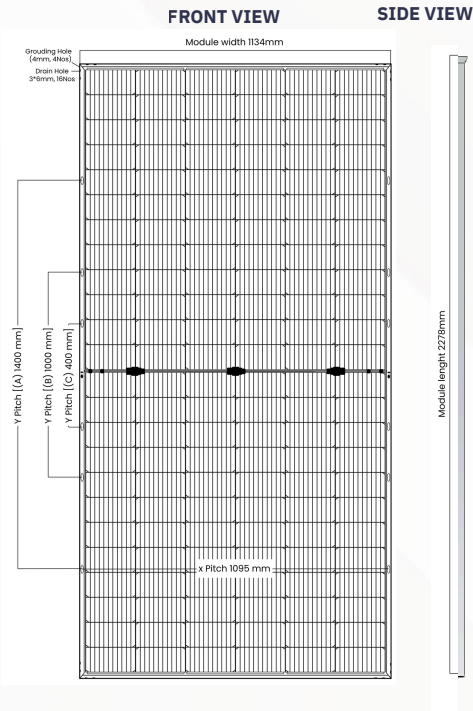
REFERENCE IV CURCE DETAIL:



LINEAR PERFORMANCE WARRANTY:



DIMENSIONS:



N-TYPE 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	MSE580144TGC		MSE585144TGC		MSE590144TGC		MSE595144TGC		MSE600144TGC	
	STC NOCT		STC NOCT		STC NOCT		STC NOCT		STC NOCT	
Nominal Maximum Power (Pmax)	580 W	435 W	585 W	439 W	590 W	443 W	595 W	439 W	600 W	450 W
Optimum Operating Voltage (Vmp)	44.75 V	42.02 V	44.94 V	42.20 V	45.12 V	42.38 V	45.31 V	42.2 V	45.50 V	42.72 V
Optimum Operating Current (Imp)	12.96 A	10.35 A	13.02 A	10.40 A	13.08 A	10.45 A	13.14 A	10.41 A	13.20 A	10.54 A
Open Circuit Voltage (Voc)	52.80 V	49.79 V	53.01 V	49.98 V	53.21 V	50.18 V	53.42 V	49.98 V	53.62 V	50.56 V
Short Circuit Current (Isc)	13.71 A	11.05 A	13.77 A	11.10 A	13.83 A	11.14 A	13.89 A	11.04 A	13.95 A	11.24 A
Module Efficiency	22.47 %		22.67 %		22.86 %		23.05 %		23.25 %	

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)	609 W	614 W	620 W	625 W	630 W
	Module Short Circuit Current / Efficiency	14.40 A / 23.60 %	14.46 A / 23.80 %	14.52 A / 24.00 %	14.58 A / 24.21 %	14.64 A / 24.41 %
10%	Nominal Maximum Power (Pmax)	638 W	644 W	649 W	655 W	660 W
	Module Short Circuit Current / Efficiency	15.08 A / 24.72 %	14.95 A / 24.93 %	15.21 A / 25.15 %	15.28 A / 25.36 %	15.34 A / 25.57 %
25%	Nominal Maximum Power (Pmax)	725 W	731 W	738 W	744 W	750 W
	Module Short Circuit Current / Efficiency	17.14 A / 28.09 %	17.21 A / 28.33 %	17.29 A / 28.57 %	17.36 A / 28.82 %	17.43 A / 29.06 %

MECHANICAL SPECIFICATIONS

Dimensions	2278 mm (L) x 1134 mm (W) x 35 mm (H)
Weight(kg)	33
Cell type / No Of Cell	144 Half-Cut N-Type TOPCon Bifacial Solar Cells
Frame	Anodized Aluminum Alloy (6005, Temper T6, Silver color)
Front Cover	Low Iron Semi-Tempered AR Coated Glass (2 mm thick)
Encapsulate	PID resistant and UV resistant Polymeric Film
Back Cover	Low Iron Semi-Tempered Glass (2 mm thick)
Junction Box	30A Split Junction Box (3 nos. with individual Bypass Diode)- Weatherproof (IP68)
Bypass Diode	50 A, 45 V, 200 °C Max Junction Temperature
Cable	4 sq. mm, 300 mm length (Custom cable lengths available on request)
Connectors	MC4 compatible (Original MC4 available upon request)
Application Class Rating	Class A
Safety Class Rating	Class II
Mechanical Load Test	5400 Pa Snow Test; 2400 Pa Wind Test (according to IEC & UL)
Mounting Holes Pitch (Y)-mm	[A] 1400 , [B] 1100, [C] 400 (Holes at 400 mm Y-pitch for tracker can be provided upon customer request)
Mounting Holes Pitch (X)-mm	1095

MAXIMUM OPERATING CONDITIONS

Operating Temperature:	-40°C to +85°C
Maximum System Voltage:	1500 VDC
Maximum Series Fuse Rating:	30 A

TEMPERATURE COEFFICIENTS

Current α (Isc) :	0.0265%/°C
Voltage β (Voc) :	-0.2261%/°C
Power γ (Pmax) :	-0.2909%/°C

STACKING STANDARD

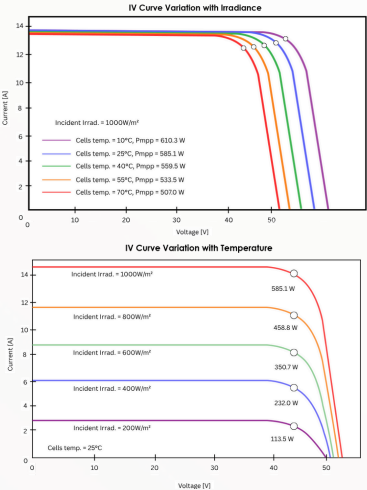
	20FT	40FT
No. of Modules per Container:	270	594
No. of Pallets per Container:	10	22
No. of Modules per Pallet/Weight:	27 Nos/940 Kg	
Pallet Dimensions in mm:	2320(L) *1000(w)*1275(H)	

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

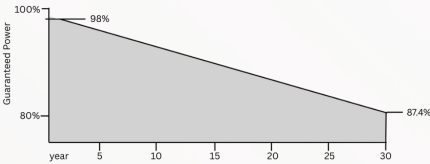
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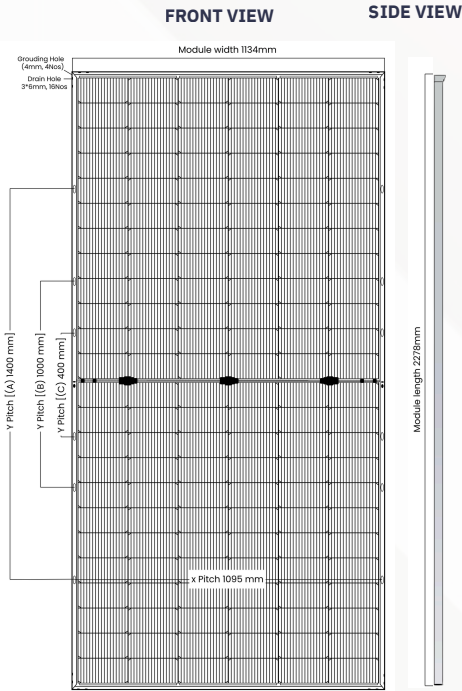
REFERENCE IV CURVE DETAIL:



LINEAR PERFORMANCE WARRANTY:



DIMENSIONS:



TOPCON 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	STC	STC	STC	STC	STC	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 A	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 Anodised Aluminum Alloy
Junction Box	IP 68 certified, 3 diodes junction box
Output Cable	Solar cable 400 mm length or customized length, 4 mm
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	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 23m/s
Maximum Series Fuse Rating	30A
Bifaciality Factor	80 ±5%

TEMPERATURE COEFFICIENTS

Current α (Isc) :	-0.04%/°C
Voltage β (Voc) :	-0.04%/°C
Power γ (Pmax) :	-0.280%/°C

PACKAGING CONFIGURATION

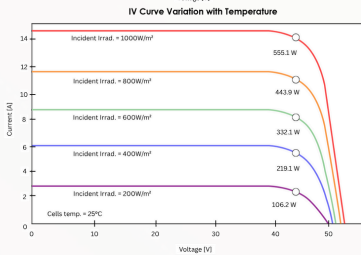
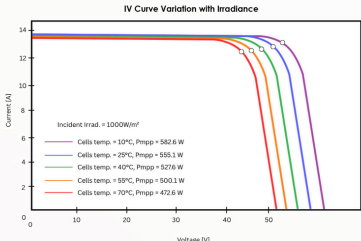
Container	40'HQ
Modules per Pallet	36
Pallets per Container	20
Modules per Container	720

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

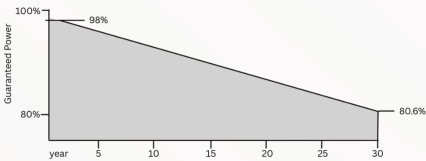
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REFERENCE IV CURVE DETAIL:



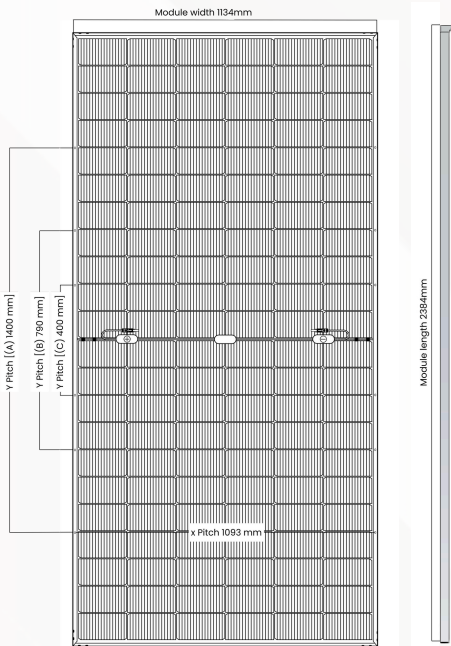
LINEAR PERFORMANCE WARRANTY:



DIMENSIONS:

FRONT VIEW

SIDE VIEW



Exhibitions & Industry Presence

Macwin Solar maintains a strong industry presence through active participation in leading exhibitions and events. We regularly showcase our innovations at major forums like the Renewable Energy India Expo (REI) and Intersolar India. Our booths at these events attract stakeholders from across the solar value chain, reflecting the growing interest in Macwin's solutions. Beyond trade shows, we engage closely with partners through dealer meet-ups and regional industry gatherings, strengthening relationships and sharing knowledge. These efforts have significantly raised Macwin's brand visibility in the Indian solar sector, positioning us as a rising leader and a trusted name in renewable energy.



OUR USP



Manufacturing Excellence

Our facility uses solar technology and automation to boost efficiency, drive innovation, and reduce environmental impact.



Shipping Excellence

We ensure safe, timely global delivery of solar panels with efficient packaging and streamlined shipping, guaranteeing the product arrives in top condition.



Quality Excellence

At Macwin Solar, every panel undergoes ISO-certified testing to ensure top quality, durability, and efficiency.



Certificate

Macwin Solar is fully certified to meet industry standards, guaranteeing top quality and reliability. Our certifications include

OUR CLIENTS



DIRECTOR HISTORY

Macwin Solar Energy – A Legacy of Vision and Growth

Macwin Solar Energy traces its roots to the vision of Mr. Bharat Budheliya and Mr. Hardik Budheliya, a first-generation entrepreneur whose journey is defined by resilience, foresight, and the ability to build businesses that serve people and industries alike. Over the years, the Budheliya family has nurtured a diverse portfolio of companies across Gujarat. From JMBC Textile, a trusted name in the textile industry, to MBC Enterprise (Agriculture) with its innovative Kitty Care products, every venture has carried forward the group's core philosophy: deliver quality, earn trust, and create growth that lasts.

Carrying this legacy of entrepreneurship and innovation into the future, Bharat laid the foundation of Macwin Solar Energy Pvt. Ltd. in 2021. His vision was clear to transform Gujarat into a hub of renewable energy and to position India as a global leader in clean power. What began as a modest regional module manufacturing unit has, in just a few years, rapidly scaled into one of Gujarat's fastest-growing solar companies.

Today, Macwin operates a 2,75,000 sq. ft. integrated facility, equipped with advanced AI-driven prediction and automation systems. This state-of-the-art setup allows Macwin to deliver not just panels, but precision-engineered solar solutions that combine high efficiency, durability, and trust. From residential rooftops to large-scale industrial projects, from commercial spaces to agricultural applications, Macwin modules are empowering India to reduce electricity costs while embracing sustainability.

The journey reflects more than just growth – it embodies the Budheliya group's timeless values of integrity, quality, service, and innovation. Every panel manufactured is not only a technological achievement but also a promise to contribute to India's net-zero carbon future. With a scaling capacity aiming towards multi-GW production, Macwin Solar is building more than panels – it is building India's energy independence, panel by panel, project by project.

INDIA'S LEADING SOLAR PANEL MANUFACTURER

WE MANUFACTURE
MODULES FROM

P-TYPE	525WP - 560WP
N-TYPE	570WP - 620WP
G-12 R	595WP - 650WP

N-TYPE TOPCon
Dual Glass (Bi-facial)

G-12R TOPCon
Dual Glass (Bi-facial)

P-TYPE Mono Perc
Glass to White Backsheet

P-TYPE Bifacial
Glass to Transparent Backsheet

INDIA'S LEADING SOLAR PANEL MANUFACTURER

2GW State of The Art Manufacturing Integrating World-class Machinery, People & Materials

AI integrated
production line

PV module manufacturer
with NABL accredited lab for
Performance & Reliability testing

State-of-the-art, latest
technology-based,
highly efficient N-type TOPCon
and P-type modules

Specialty Products
like G-12 and G-12R PV
modules

Global Certification



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

MACWIN Awards



INDIA'S LEADING SOLAR PANEL MANUFACTURER

CONTACT US

Macwin Solar Energy provides dedicated customer support to encourage the adoption of green solutions for sustainability and energy efficiency.

HEAD OFFICE

403, Apple Square, Gajera
School Char Rasta, Katargam,
Surat, Gujarat - 395004, India

BHAT GAM FACTORY

Block No. 462, Near Kanhya
Showroom, Olpad-Vadoli Road,
Surat, Gujarat - 394540, India

OFFICE

C-1003, Titanium Square,
Thaltej Cross road, Sarkhej -
Gandhinagar Highway,
Ahmedabad, Gujrat - 380054

OLPAD FACTORY

Plot No. 56, Olpad G.I.D.C, Behind
Vikas Petrol Pump, Surat-Olpad
Road, Surat, Gujarat - 394540

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FACTORY CONTACT NO:

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