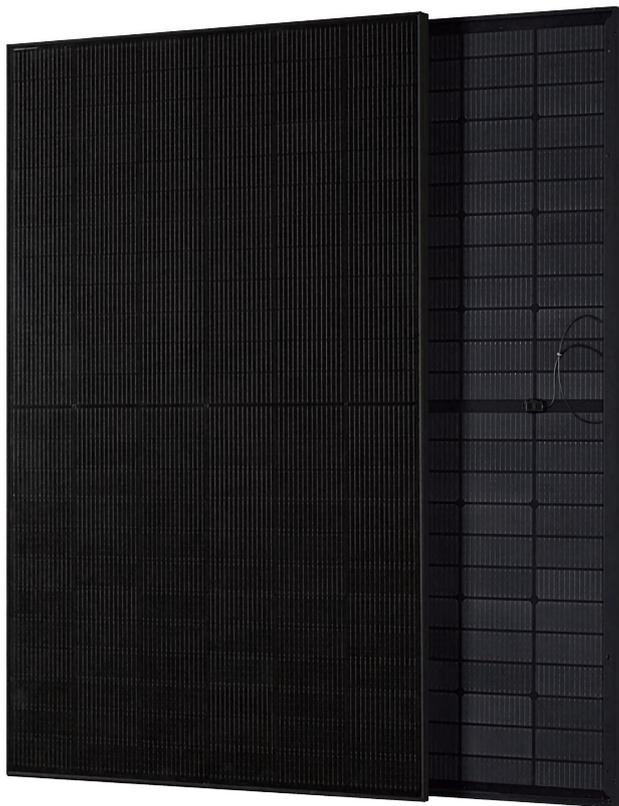




Twisun Pro 1/3 Cut N-Topcon Full Black Bifacial 430-460W

MS(430-460)MDG - 48H - FBBG
Mono N-Type 210 * 182 mm 144 Cells

Specifically customized for
household rooftop PV systems



- 1/3 Cut Technology, Higher Output**
Unique 1/3 cut cells lower operating temperature by 20% compared to half-cells, boosting power output by 4.64%.
- 10A Low Current, Safer Operation**
Minimal heat loss, lower operating temperature, reduced hot spot risk, enhanced electrical safety.
- Higher Power, Higher Efficiency**
Power increased to 460W with high-density module technology, achieving 23% maximum efficiency.
- Ultra-Low Degradation, Longer Warranty**
1% degradation in the first year, 0.4% annually after the first year, with a 30-year product and power warranty.
- Lightweight Dual-Glass Structure, More Durable**
Weighs only 21.35kg, easy to transport and install, reducing roof load.
- Higher Performance in Low Light**
Significant efficiency gain in weak light, early start in the morning, late shutdown in the evening, extending power generation.
- High Compatibility, Easy Integration**
Low current and standard size of 1.998m² fit mainstream inverters and mounting systems.

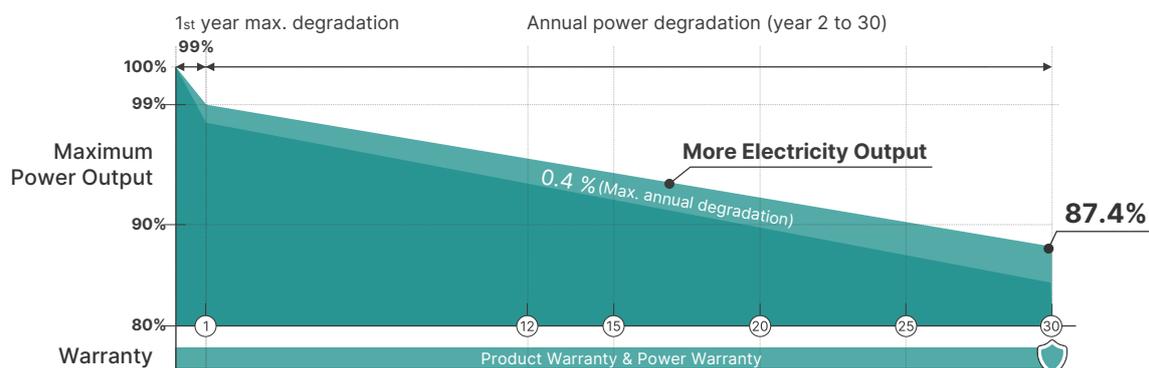


23.02%
Maximum Efficiency

0 ~ +5W
Positive Power Tolerance

30 Years
Product Warranty

30 Years
Power Warranty



Electrical Data(STC / NOCT)

Test Conditions	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Peak Power Watts- P_{MAX} (Wp)*	430	329	435	333	440	337	445	341	450	344	455	348	460	351
Power Tolerance- P_{MAX} ((WW))v	0 ~ +5													
Maximum Power Voltage- V_{MPP} (V)	43.20	40.70	43.60	41.00	44.00	41.40	44.30	41.70	44.60	42.00	45.00	42.30	45.30	42.60
Maximum Power Current- I_{MPP} (A)	9.96	8.08	9.99	8.12	10.01	8.14	10.05	8.17	10.09	8.19	10.11	8.22	10.16	8.24
Open Circuit Voltage- V_{OC} (V)	51.40	48.70	51.80	49.10	52.20	49.50	52.60	49.90	52.90	50.20	53.40	50.60	53.90	50.90
Short Circuit Current- I_{SC} (A)	10.59	8.54	10.64	8.58	10.67	8.60	10.71	8.63	10.74	8.66	10.77	8.68	10.81	8.71
Module Efficiency η m (%)	21.50	21.50	21.80	21.80	22.00	22.00	22.30	22.30	22.50	22.50	22.80	22.80	23.02	23.02

* STC: Air Mass AM1.5, Irradiance at 1000 W/m², Cell Temperature 25 °C / Measuring tolerance: ±3%
 * NOCT: Irradiance at 800 W/m², Cell Temperature 20 °C, Wind Speed 1m/s / Measuring tolerance: ±3%

Electrical Performance Parameters and Different Backside Power Gains (taking 5% & 10% power gain as an example)

Power Gain	5%	10%	5%	10%	5%	10%	5%	10%	5%	10%	5%	10%	5%	10%
Maximum Power- P_{MAX} (Wp)	452	473	457	479	462	484	467	490	472	495	477	501	482	504
Maximum Power Voltage- V_{MPP} (V)	43.20	43.20	43.60	43.60	44.00	44.00	44.30	44.30	44.60	44.60	45.00	45.00	45.30	45.30
Maximum Power Current- I_{MPP} (A)	10.46	10.96	10.49	10.99	10.51	11.01	10.55	11.06	10.58	11.10	10.60	11.14	10.66	11.13
Open Circuit Voltage- V_{OC} (V)	51.40	51.40	51.80	51.80	52.20	52.20	52.60	52.60	52.90	52.90	53.40	53.40	53.90	53.90
Short Circuit Current- I_{SC} (A)	11.12	11.65	11.17	11.70	11.20	11.74	11.25	11.78	11.30	11.82	11.35	11.86	11.40	11.92

* Power Bifaciality: 80±5%

Mechanical Data

Solar Cells	N-type TOPCon 210 * 182 mm
Cell Orientation	144 cells (6 x 24)
Module Dimensions	1762 mm x 1134mm x 30 mm
Weight	21.35 kg
Front Glass	1.6 mm, High Transmission, AR Coated Heat Strengthened Glass
Encapsulant material	POE / EVA
Back Glass	1.6 mm, Heat Strengthened Glass
Frame	30 mm, Aluminum Frame
J-Box	IP 68 Rated
Cables	Photovoltaic Technology Cable 4.0 mm ² Portrait: N 1000 mm/P 1000 mm Length Can be Customized
Connector	MC4 Compatible

* Please refer to regional datasheet for specific connector

Mechanical Data

NOCT(Nominal Operating Cell Temperature)	43°C (±2°C)
Temperature Coefficient of P_{MAX}	-0.29% / °C
Temperature Coefficient of V_{OC}	-0.24% / °C
Temperature Coefficient of I_{SC}	0.04% / °C

* Do not connect Fuse in Combiner Box with two or more strings in parallel connection

Application Environment

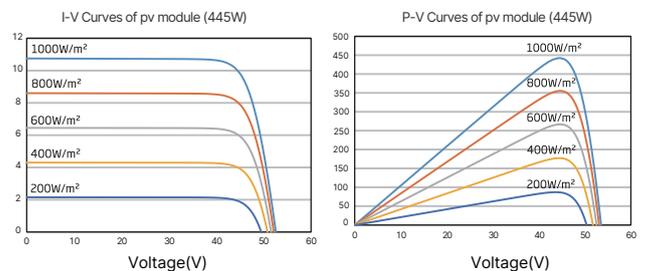
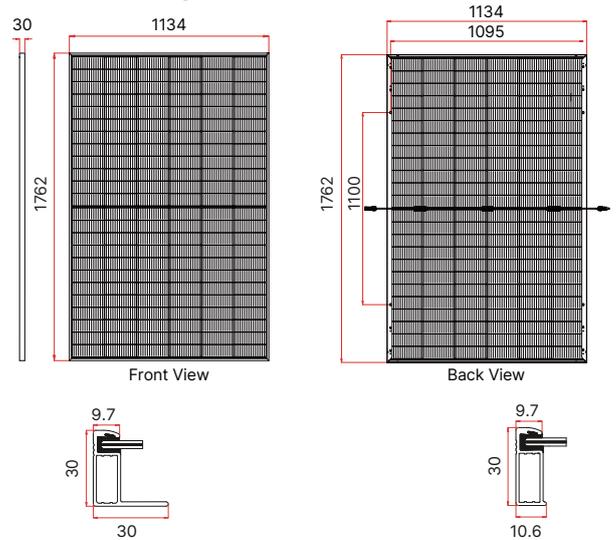
Operational Temperature	-40 ~ +85°C
Maximum System Voltage	1500 VDC
Max Series Fuse Rating	25 A
Mechanical Performance	P 5400 Pa / N 4000 Pa

Application Environment

Modules Per Pallet: 36 Pieces
Modules Per 40' Container: 936 Pieces (26 Pallets)

* Please refer to product warranty for details

Dimensions of pv module (mm)



Mechanical Data

30 Years Product Warranty

30 Years Power Warranty

1% First Year Degradation

0.4% Annual Power Degradation

* Please refer to product warranty for details