


BIFACIAL N-TYPE MONO CRYSTALLINE HALF-CUT MODULE - DOUBLE GLASS

460 / 465 / 470 / 475 / 480 Watts


TOPCon Series

Overview


N-type solar cells (TOPCon) are seen as the technology of the future. N-type (TopCon) technology guarantees high performance and low degradation of the PV module, substantially improving the results and the yield in the time. "TOPCon" Series module is the ideal solution for end users who want a Quality PV & reliable product over time and a fast turnaround on their investments.



Guaranteed mechanical resistance to severe weather conditions




Positive Tolerance




100 % electroluminescence tested

Key benefits




Zero Light Induced Degradation


0% Front Grid Shading Loss




Low LCOE



25 Years Limited Product Warranty



Low Pmax Temperature Coefficient



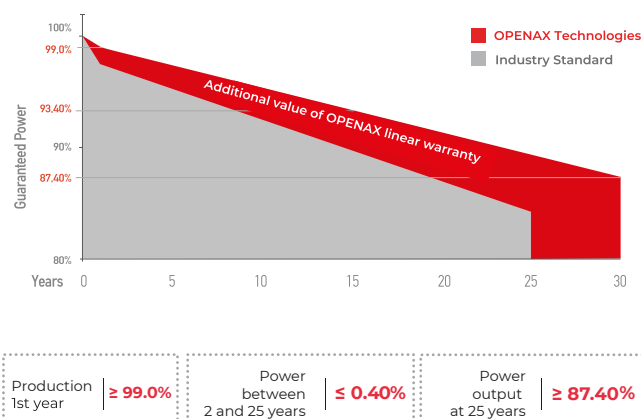
Higher Light Conversion

Tests, Certifications and Guarantees

Standard tests	IEC 61215, IEC 61730
Factory quality testing	ISO 9001: 2015. ISO 14001: 2015
Certifications	Conformity to CE. PV CYCLE Fire safety Class C according to UL790
Wind and Snow Loads Testing	Module certified to withstand extreme wind [2400 Pascal] and snow loads [5400 Pascal]
Withstanding Hail	Maximum Diameter of 25mm with impact speed of 23m/s
Power Tolerance	Guaranteed +0/+5W [STC condition]

Warranties	<ul style="list-style-type: none"> 30-year limited product warranty 15-year manufacturer warranty on 94, 10% of the nominal performance Linear power output guarantee over 25 years
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Linear performance guarantees



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OX-xxx-M10TCBVB120-01(xxx=460-490)

Electrical performance

POWER CLASS ⁽¹⁾			460		465		470		475		480	
Measurement condition			STC ⁽²⁾	NMOT ⁽³⁾	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum power	Pmax [Wp]		460	348	465	352	470	355	475	359	480	363
Voltage at Pmax	Vmp [V]		34,72	32,80	34,94	32,99	35,15	33,08	35,37	33,27	35,58	33,46
Current at Pmax	Imp [A]		13,25	10,61	13,31	10,67	13,37	10,73	13,43	10,79	13,49	10,85
Open Circuit Voltage	Voc [V]		41,94	39,91	42,13	40,10	42,32	40,29	42,51	40,48	42,70	40,67
Short circuit current	Isc [A]		14,02	11,31	14,08	11,36	14,14	11,41	14,20	11,46	14,26	11,51
Surface efficiency	Eff [%]		21,25		21,48		21,71		21,94		22,17	
Max. Reverse Current	Ir [A]		30									
System voltage max	Vsys [V]		1500V CD (IEC)									

(1) Measurement tolerances: Pmax (± 3%), Isc & Voc (± 3%) - Power classification 0/+5W

(2) STC (Standard Test Conditions): Irradiance 1000W/m² Cell Temperature 25°C, AM 1.5

(3) NMOT (Nominal Module Operating Temperature): Irradiance 800W/m² Ambient Temperature 20°C, AM

Bi Facial Output (4)

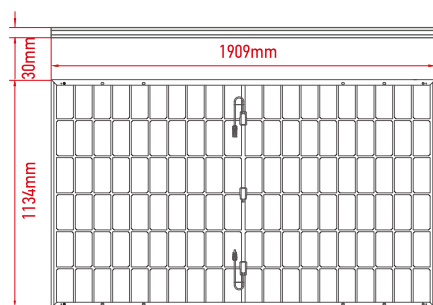
POWER CLASS			460		465		470		475		480	
Power with Backside Gain			Pmax (Wp)	Eff (%)	Pmax (Wp)	Eff (%)	Pmax (Wp)	Eff (%)	Pmax (Wp)	Eff (%)	Pmax (Wp)	Eff (%)
	+5	(%)	483,0	22,3%	488,3	22,6%	493,5	22,8%	498,8	23,0%	504,0	23,3%
	+10	(%)	506,0	23,4%	511,5	23,6%	517,0	23,9%	522,5	24,1%	528,0	24,4%
	+15	(%)	529,0	24,4%	534,8	24,7%	540,5	25,0%	546,3	25,2%	552,0	25,5%
	+20	(%)	552,0	25,5%	558,0	25,8%	567,0	26,1%	570,0	26,3%	576,0	26,6%
	+25	(%)	575,5	26,6%	581,3	26,8%	587,5	27,1%	593,0	27,4%	600,0	27,7%
	+30	(%)	598,0	27,6%	604,5	27,9%	611,0	28,2%	617,5	28,5%	624,0	28,8%

(4) Bifaciality Factor > 90% - Back-side power gain depends upon the specific project albedo - Efficiency is according to the module

Mechanical characteristics

Dimensions	1909mm x 1134 x 30mm
Weight	27,0 Kg
Cells	HJT 182mm x 91mm (2x60 Pcs) - M10
Front panel	2.0mm Tempered and low iron glass + ARC
Rear panel	2.0mm Tempered and low iron glass
Frame	Anodized aluminum alloy
Junction box	IP68 - 3 Bypass Diodes
Connectors	MC4 Compatible
Cables	Cross-section: 4mm ² - Length: 350mm or can be customized

Dimensions



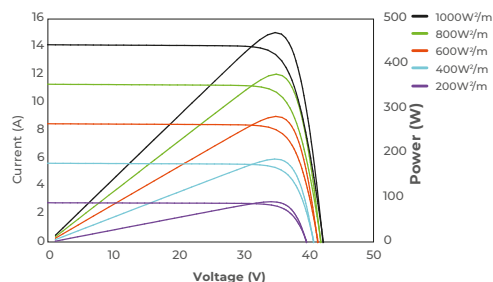
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I-V curve

Power loss in low-light environments: 200W/m² is less than 3%.



Thermal coefficients

Coeff./ Pmax	-0.290% /°C
Coeff./ Voc	-0.250% /°C
Coeff./ Isc	+0.045% /°C
Operating temperature	-40~+85 °C
Nominal module operating temperature (NMOT)	42 ± 2 °C

Packaging configuration

Container	40' (HC)
Pieces per Pallet	36
Pallets per Container	24
Pieces per Container	(36+36)x12=864 pcs