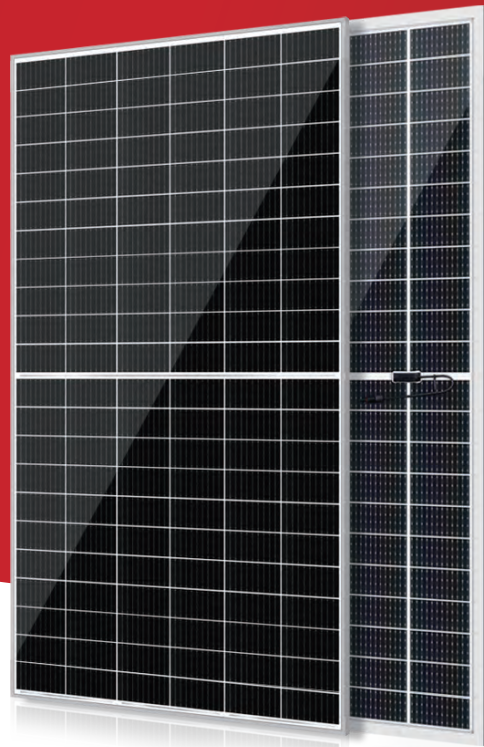


ONYX

675-690W

High Efficiency N-TOPCon Bifacial Module



Bifacial technology enables additional energy harvesting from rear side (up to 30%)



30 years lifespan brings 10-30% additional power generation comparing with conventional P-type module



N-type solar cell has no LID naturally which can increase power generation



Excellent low irradiance performance.



Better light trapping and current collection to improve module power output and reliability.



Industry leading lowest thermal co-efficient of power.



Optimized electrical design and lower operating current for reduced hot spot loss and better temperature coefficient.

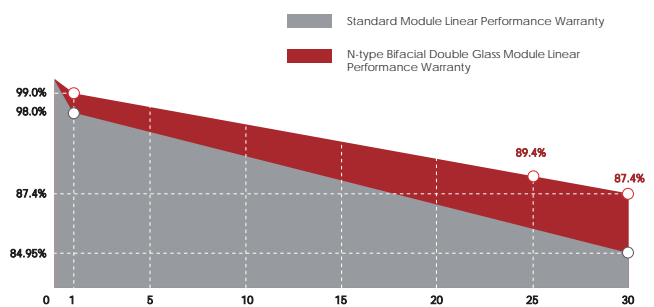


Certified to withstand: wind load (2400 Pa) and snow load (5400 Pa).



100% triple EL test enabling remarkable reduction of hidden crack rate of modules

LINEAR PERFORMANCE WARRANTY



30 years

Product Workmanship Warranty

30 years

Output Power Warranty

COMPREHENSIVE CERTIFICATES



ELECTRICAL DATA(STC)

Model Number	ES675M66-NT3-BF	ES680M66-NT3-BF	ES685M66-NT3-BF	ES690M66-NT3-BF
Peak Power Watts- $P_{MAX}(Wp)^*$	675	680	685	690
Power Output Tolerance	0~5W			
Open Circuit Voltage- $V_{OC}(V)$	46.28	46.33	46.38	46.43
Short Circuit Current- $I_{SC}(A)$	18.45	18.50	18.54	18.63
Maximum Power Voltage- $V_{MPP}(V)$	38.61	38.87	39.12	39.25
Maximum Power Current- $I_{MPP}(A)$	17.48	17.50	17.51	17.58
Efficiency(%)	21.7	21.9	22.1	22.2

STC:Irradiance 1000w/m²,Cell Temperature 25°C,Measure Tolerance :+/- 3%

ELECTRICAL DATA(NOCT)

Maximum Power- $P_{MAX}(Wp)^*$	503	507	510	510
Open Circuit Voltage- $V_{OC}(V)$	43.69	43.73	43.78	43.83
Short Circuit Current- $I_{SC}(A)$	14.91	14.95	14.98	15.05
Maximum Power Voltage- $V_{MPP}(V)$	36.14	36.39	36.63	36.75
Maximum Power Current- $I_{MPP}(A)$	13.91	13.92	13.93	13.99

NOCT:Irradiance at 800W/m²,Ambient Temperature 20°C,Wind Speed 1m/s

MECHANICAL DATA

Dimensions	2384x1303x35mm
Weight	38.8kg
Cell Type	N type Mono-crystalline, 210x105 mm
Cell Number	132
Front Glass	2.0mm, Anti-Reflection Coating
Back Glass	2.0mm, Heat Strengthened Glass
Frame Type	Anodized Aluminium Alloy
Junction Box Protection Class	IP 68
Cables	4.0mm ² , 300mm/1200mm or Customized Length
Connectors	MC4 Compatible

TEMPERATURE RATINGS

NOCT	43°C(±2°C)
Temperature Coefficient of P_{MAX}	-0.30%/°C
Temperature Coefficient of V_{OC}	-0.26%/°C
Temperature Coefficient of I_{SC}	+0.046%/°C

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

WARRANTY

30 years Product Workmanship Warranty
30 years Output Power Warranty

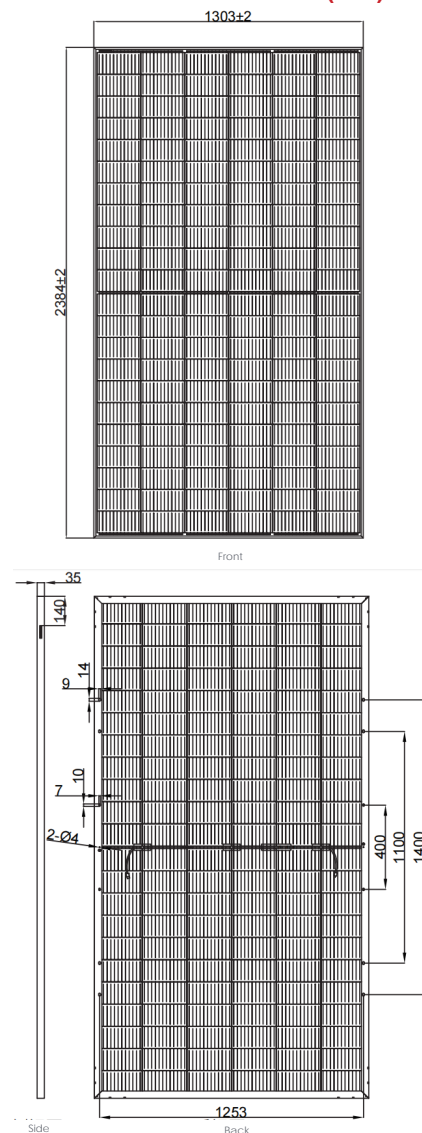
MAXIMUM RATINGS

Operational Temperature	-40~+85 °C
Front/Rear Side Load	5400/2400pa
Max Series Fuse Rating	35A
Max System Voltage	1500V (IEC)
Fire Rating	Class A

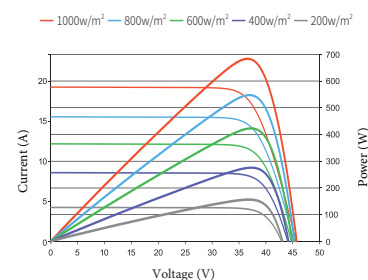
PACKAGING CONFIGURATION

Modules per box:31 pieces
Modules per 40' container:558 pieces

DIMENSIONS OF PV MODULE(mm)



Current-Voltage & Power-Voltage Curves



Temperature Dependence of I_{sc} , V_{oc} , P_{max}

