



Evolution ELITE 400

EVO-PLM-400H8MB-108

Monocrystalline Solar Module

WITH HIGH EFFICIENCY PERC TECHNOLOGY



Performance

Good performance even under low light conditions



Ultrablack

Great aesthetic look



Reliability

Strict selection of raw materials and strict quality control ensure reliability



Ultra reflective backing sheet

Increases performance, maximises solar irradiance capture



Smart-ready

Optional smart-ready design. Easy upgrade into smart solar module solution



Module Efficiency

20% Module Efficiency



Limited Peak Power Warranty -

12 years @92%
25 years @85%
30 years @80%



Water Drainage Corners

Avoids dirt buildup, unique design structure, best ever product quality



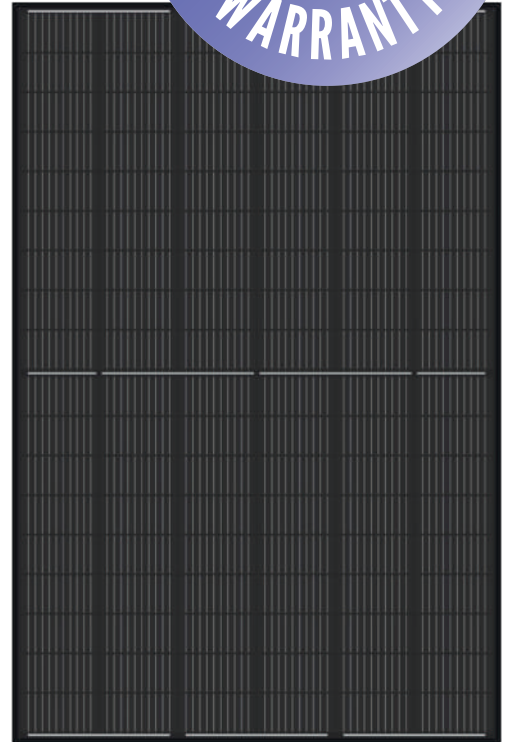
9 Busbars

Improved performance, decreases natural loss



Lifetime

Performance & product warranty



- ✓ Minimised Surface Recombination speed – to improve cell voltage and current
- ✓ Increased internal reflectivity – to improve cell current
- ✓ Up to 10% more power per m2 compared to standard modules
- ✓ Excellent low light performance – to ensure optimum generation year round
- ✓ Maintains temperatures to ensure energy generation is more efficient



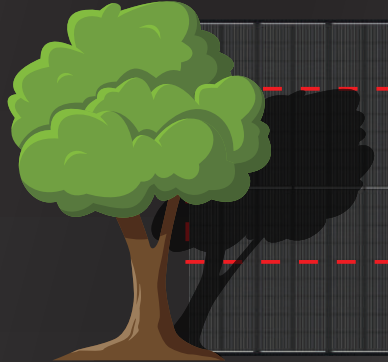
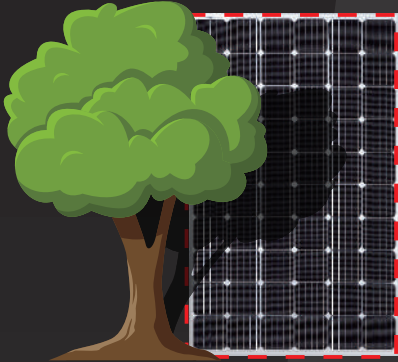
Higher Yield Due to Better Shading Response

Evolution Half-Cell Black Series comprises two separated and identical solar cell arrays, which means the ordinary strings of cells are cut into halves, and these shorter strings compose arrays which has separated current paths. When a module is shaded, only one side shaded array's current will be impacted, while the other array will still be functionally producing power. Under this circumstance, when a module is shaded, the affected working areas of Evolution Half-Cell Black Series will be 50% less.

By cutting solar cell into halves, the internal power loss will be lower and hot spot effect will also be reduced.

Standard Module

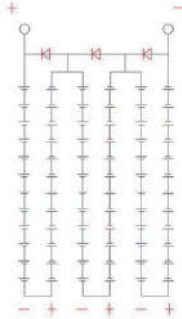
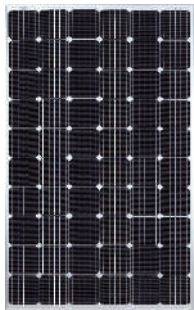
Evolution Half-Cell Black Series



Less Mismatch loss

Instead of 6 internal strings of cells, the Evolution Half-Cell Black Series module has 2×6 shorter ones. This design effectively deals with the mismatch happened between cells caused by shadow, out of sync performance degradation, etc.

Standard Module / With 6 internal strings of cells



Design Sketch

Circuit Diagram

Electrical Mismatch

Module current output is 8.7A, current mismatch in series is **0.3A**

Evolution Half-Cell Black Series / With 2×6 internal strings of cells



Design Sketch

Circuit Diagram

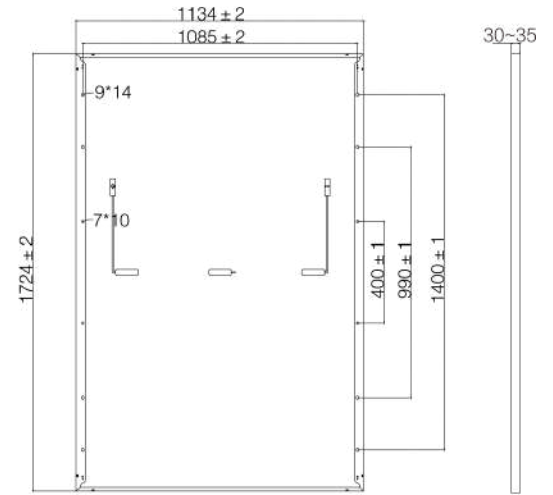
Electrical Mismatch

Module current output is 4.5+4.35=8.75A, current mismatch in series is **0.15A**

Electrical Characteristics (STC*)

Maximum Power at STC (Pmp)	395	400	405	410	415
Maximum Power Voltage (Vmp)	31.01	31.18	31.35	31.52	31.68
Maximum Power Current (Imp)	12.74	12.83	12.92	13.01	13.10
Open Circuit Voltage (Voc)	37.04	37.21	37.38	37.55	37.71
Short Circuit Current (Isc)	13.58	13.67	13.76	13.83	13.94
Module Efficiency at STC (nm)	20.20%	20.46%	20.71%	20.97%	21.22%

STC: 1000W/m² irradiance, 25°C cell temperature, AM 1.5g spectrum.
Power tolerance: ±5%



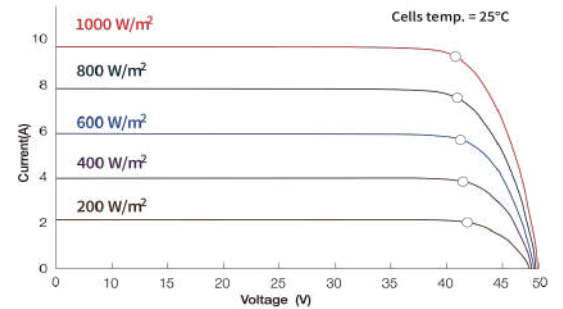
Electrical Characteristics (NMOT*)

Maximum Power at STC (Pmp)	290	294	298	301	305
Maximum Power Voltage (Vmp)	28.46	28.65	28.82	28.91	29.10
Maximum Power Current (Imp)	10.19	10.26	10.34	10.41	10.48
Open Circuit Voltage (Voc)	34.26	34.42	34.58	34.73	34.88
Short Circuit Current (Isc)	10.95	11.02	11.09	11.16	11.24

NOCT: 800W/m² irradiance, 20°C environment temperature, 1m/s wind speed.

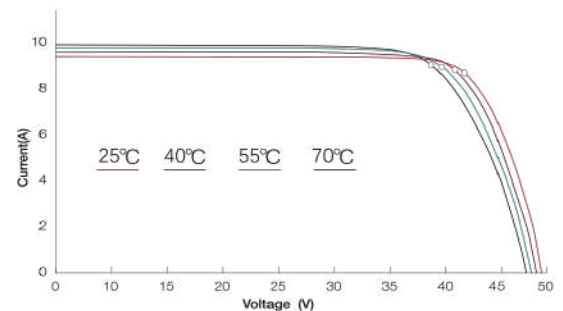
Mechanical Specifications

Solar Cells	PERC Mono crystalline 182×91mm
External Dimensions	1724×1134×35mm(L×W×H)
Front Glass	3.2mm AR coating tempered glass, low iron
Weight	20.8Kg
Output Cable	4.0 mm ² , cable length 1000mm
Connector	MC4 Compatible
Junction Box	IP 68, 3 diodes
Frame	Anodized aluminium alloy



Temperature Characteristics

Isc Temperature Coefficient	+0.048%/°C
Voc Temperature Coefficient	-0.31%/°C
Pmax Temperature Coefficient	-0.38%/°C
Nominal Operating Cell Temperature (NOCT)	43 ± 2°C



Operating Characteristics

Max. system voltage	DC1500V
Limiting reverse current	25A
Operating temperature range	-40°C ~ 85°C
Max. static load front (e.g., snow)	5400Pa
Max. static load back (e.g., wind)	2400Pa
Max. hailstone impact (diameter / velocity)	25mm / 23m/s

Package

Container	40'HQ
Panel Size(L×W×H)	1724×1134×35mm
Pieces Per Big Pallet	62
Big Pallets Per Container	13
2 Pieces Per Carton Package Inside Container	30 (2 Pieces×15 Cartons=Total 30 Pieces)
Total Pieces Per Container	836 (62×13+30=836)

