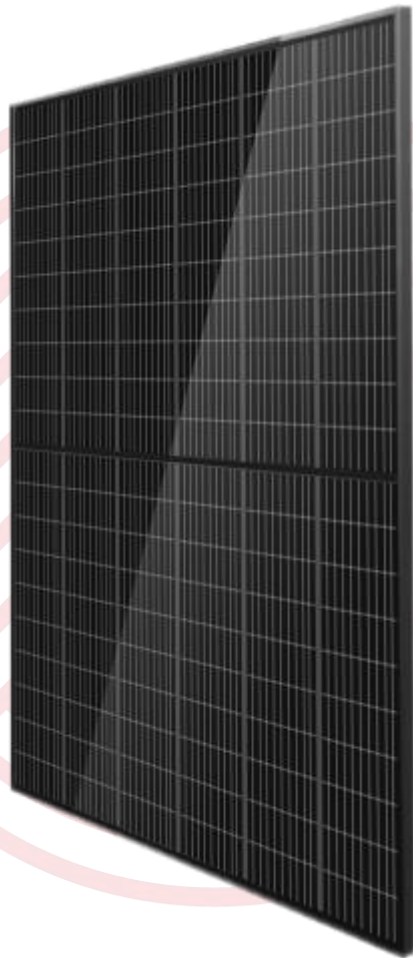
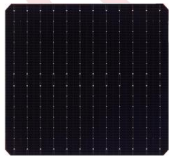


## TOPCon N type Mono-crystalline 460-480Watt Full Black

0~+5W POWER TOLERANCE

High efficiency TOPCon N - type solar module



### Module characteristics



**Strong Mechanical Strength**  
Passes the wind load test of 2400Mpa and the snow load test of 5400Mpa



**Lower attenuation**  
N-type, good reliability and lower LID/LETID attenuation rate.



**PID resistance**  
The attenuation probability of PID phenomenon is minimized through solar cell production technology optimization and raw material control



**Harsh environmental adaptation**  
Robust design for demanding climate conditions.

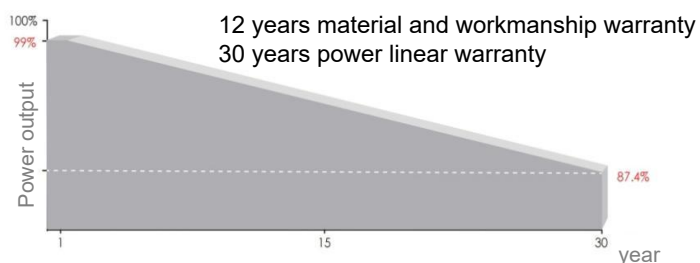


**Multiple busbar and Half cell technique**  
More light utilization and current collection capabilities, effectively improving product power output and reliability



### Long and reliable quality assurance

IEC61215(2016), IEC61730(2016)  
ISO9001:2015: Quality management system  
ISO14001:2015: Environmental management system  
ISO45001:2018: Occupational health and safety management system



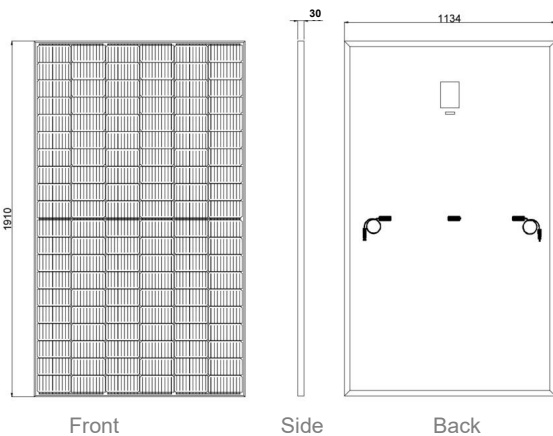
Linear attenuation of 0.4% per year from the 2nd to 30th year.

# Electrical Parameters

Model Type	ESM-460T		ESM-465T		ESM-470T		ESM-475T		ESM-480T	
	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT	STC	NOCT
Maximum Power (Pmax)	460	346	465	350	470	353	475	357	480	361
Open Circuit Voltage (Voc)	32.5	39.94	42.22	40.10	42.38	40.25	42.54	40.41	42.71	40.57
Short Circuit Current (Isc)	13.99	11.29	14.07	11.36	14.15	11.42	14.23	11.49	14.31	11.55
Maximum Power Voltage (Vmp)	34.72	32.60	34.89	32.77	35.05	32.94	32.21	33.10	35.38	33.27
Maximum Power Current (Imp)	13.25	10.61	13.33	10.67	13.41	10.73	13.49	10.79	13.57	10.85
Module Efficiency - $\eta_m$ (%)	21.24		21.6		21.8		22.0		22.2	
Operational Temperature	-40°C ~ +85°C									
Maximum System Voltage	1500VDC									
Maximum Series Fuse Rating	25A									
Power Tolerance	0 ~ +3%									
Temperature Coefficient of Pmax	-0.310%/°C									
Temperature Coefficient of Voc	-0.260%/°C									
Temperature Coefficient of Isc	+0.046%/°C									
Nominal Operating Cell Temperature	45 ± 2°C									
Safety Class	Class II									
Max Load (Front/back)	5400Mpa/2400Mpa									

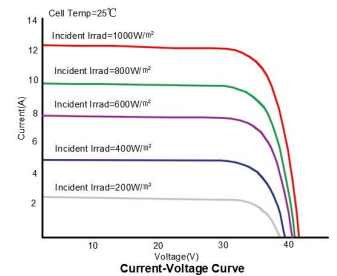
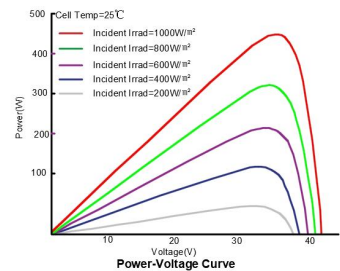
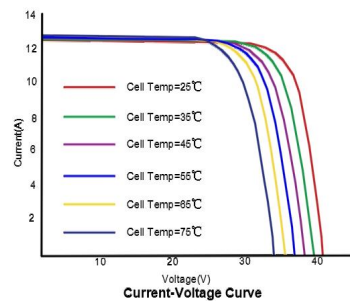
STC: Irradiance 1000W/m<sup>2</sup> Cell temperature 25°C Atmospheric quality = 1.5  
 NOCT: Irradiance 800W/m<sup>2</sup> Ambient temperature 25°C Atmospheric quality = 1.5 Wind speed 1m/S

## Mechanical Diagrams



Length: + 2mm  
 Width: + 2mm  
 Thickness: + 1mm  
 Hole pitch: + 2mm

## Curve



## Packing Details:

36pcs/pallet  
 40GP: 24 pallets/container, 864pcs/container

### EINNOVA SOLARLINE ENERGY CORP. LIMITED

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 EMAIL : emma.wu@einnova-solarline.com  
 Website: www.einnova-solarline.com

## Specification

Cell type	N type mono crystalline 182mm
Half-cell quantity	120pcs (6×20)
Dimension	1916 (±2) × 1134 × 30mm
Weight	24kg ± 3%
Glass	3.2mm, tempered and AR coated
Frame	Black Anodized Aluminum Alloy
Junction Box	IP68
Cable	1000mm (can be customized)