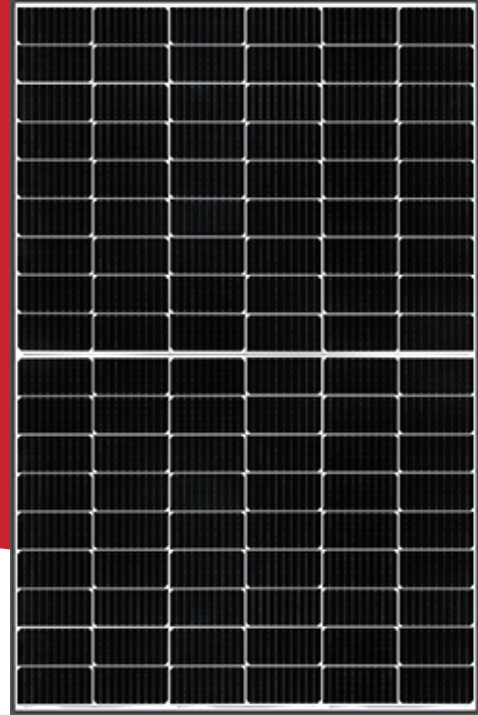


**ONYX**

# 390-415W

High Efficiency Half-Cell Mono PERC Module



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.

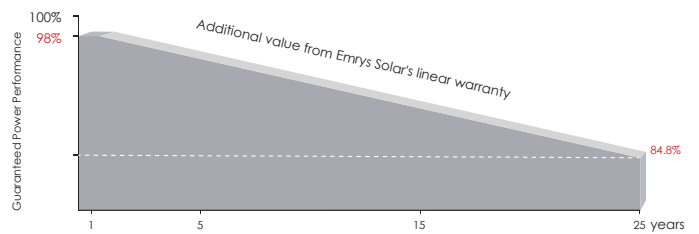


Certified to withstand: wind load (2400 Pa) and snow load (5400 Pa).



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

## LINEAR PERFORMANCE WARRANTY


**25** years

Product Workmanship Warranty

**30** years

Output Power Warranty

## COMPREHENSIVE CERTIFICATES



**ELECTRICAL DATA(STC)**

Part Number	ES390M60	ES400M60	ES410M60	ES415M60
Peak Power Watts- $P_{MAX}(Wp)^*$	390	400	410	415
Power Output Tolerance	0~5W			
Open Circuit Voltage- $V_{oc}(V)$	36.54	36.94	37.34	37.90
Short Circuit Current- $I_{sc}(A)$	13.50	13.60	13.70	13.72
Maximum Power Voltage- $V_{MPP}(V)$	30.42	30.82	31.22	32.00
Maximum Power Current- $I_{MPP}(A)$	12.82	12.94	13.06	12.97
Panel Efficiency(%)	19.95	20.46	20.97	21.22

STC :Irradiance 1000w/m<sup>2</sup>, Cell Temperature 25°C Air Mass AM1.5 \*Power Binning: +/-5W

**ELECTRICAL DATA(NOCT)**

Maximum Power- $P_{MAX}(Wp)^*$	287	295	302	314
Open Circuit Voltage- $V_{oc}(V)$	28.38	28.78	29.18	29.60
Short Circuit Current- $I_{sc}(A)$	10.11	10.25	10.35	10.61
Maximum Power Voltage- $V_{MPP}(V)$	34.09	34.49	34.89	35.25
Maximum Power Current- $I_{MPP}(A)$	10.60	10.70	10.80	11.23

NOCT: Irradiance at 800W/m<sup>2</sup>, Ambient Temperature 20°C, Wind Speed 1m/s

**MECHANICAL DATA**

Panel Dimension(H/W/O)	1724 x 1134 x 30 mm
Weight	21.8kg
Cell Type	Monocrystalline PERC
Cell Size	182 x 91 mm
Cell Number	108
Glass Type	High Transmission, AR Coated Heat Strengthened Glass
Glass Thickness	3.2mm
Encapsulant Type	EVA
Frame Type	Anodized Aluminium Alloy, Silver or Black
Junction Box Diodes	3
Junction Box Protection Class	IP 68
Connector Type	MC4 or MC 4 Compatible
Cables	1x4mm <sup>2</sup> , (+):1100mm or Customized Length

**TEMPERATURE RATINGS**

NOCT(Nominal Operating Cell Temperature)	41°C(±3°C)
Temperature Coefficient of $P_{MAX}$	-0.34%/°C
Temperature Coefficient of $V_{oc}$	-0.25%/°C
Temperature Coefficient of $I_{sc}$	-0.04%/°C

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

**MAXIMUM RATINGS**

Operational Temperature	-40~±85 °C
Rear Side Load	4000pa
Front Side Load	5400pa
Max Series Fuse Rating	25A
Max System Voltage	1500V (IEC)

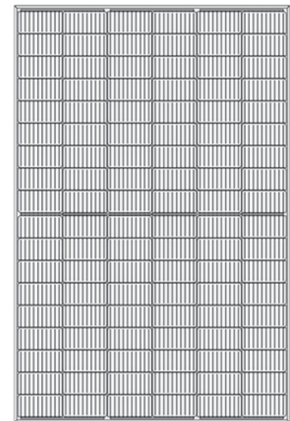
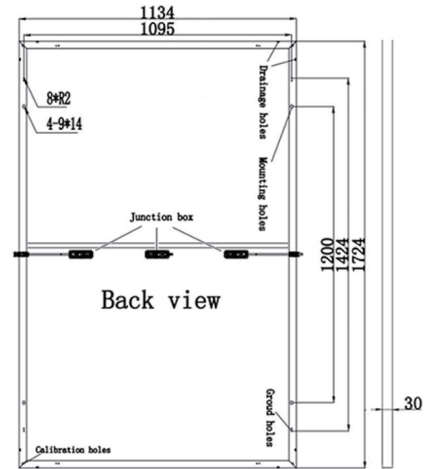
**WARRANTY**

25 years Product Workmanship Warranty
30 years Output Power Warranty

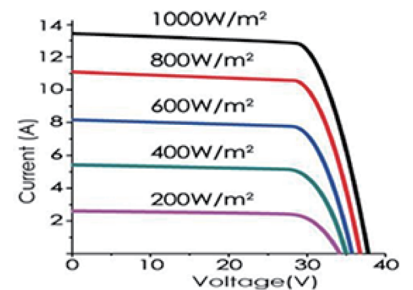
**PACKAGING CONFIGURATION**

Modules per box:36 pieces
Modules per 40'container:936 pieces

**DIMENSIONS OF PV MODULE(mm)**



**I-V CURVES OF PV MODULE**



**P-V CURVES OF PV MODULE**

