

# 590-615W

SUBSTRATE  
**GLASS** ●  
MESH GLASS ●

FRAME TYPE  
**ALUMINIUM** ●  
STEEL ●

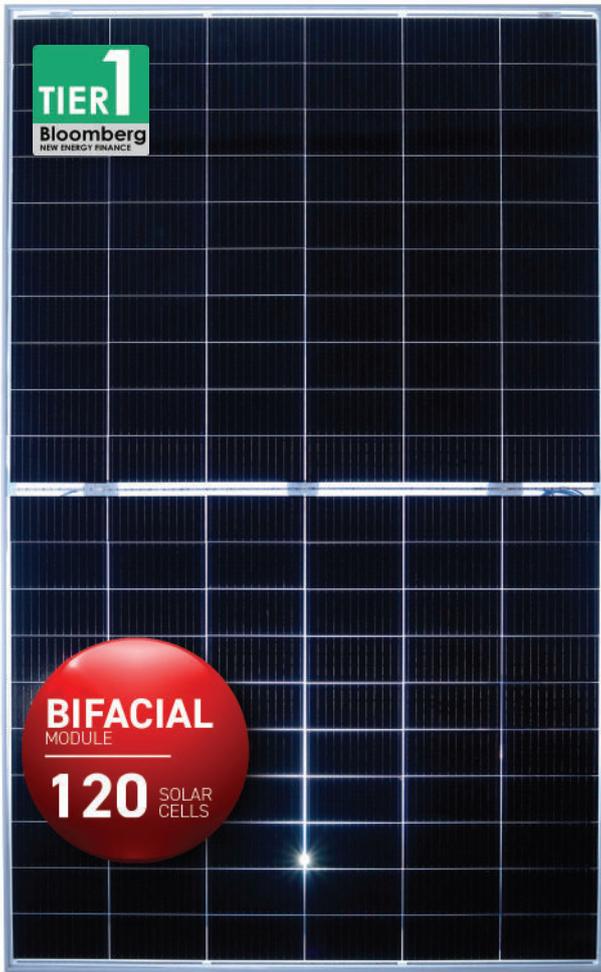
FRAME VARIANT  
**SILVER** ●  
BLACK ●

MAXIMUM EFFICIENCY %  
**21.73**

CELL TYPE  
**G12 HALF CUT**

PRODUCT WARRANTY  
**12** YEARS

PERFORMANCE WARRANTY  
**30** YEARS



## RELIABILITY IS IMPROVED

- Higher corrosion resistance to severe conditions of sand dust, concentrated ammonia and salt mist
- Low risk of module warping & micro cracking



## HIGHLY AUTOMATED PRODUCTION LINE

- Multi stage EL and digitalised visual inspection results in lower defect rates
- Implemented engineering excellence ensures top notch quality



## LOWER LCOE

- Lower balance of systems cost
- Improves value proposition of the product with competitive ROI



## PROLONGED SAFETY ASSURANCE

- IP68 with potting JB provides higher level of water ingress protection
- High insulation resistance for ensuring electrical safety



## SUPERIOR HAIL TEST PERFORMANCE

- ø 45mm hail test passed from third party laboratory with impact velocity up to 27m/s

### PRODUCT CERTIFICATES



### SYSTEM CERTIFICATES

IEC 61215 : 2021, IEC 61730, UL 61215, UL 61730, IS 14286, IS/IEC 61730, IEC 61701, IEC 62716, IEC 60068-2-68, CAN-CSA

### INTERNATIONAL ORGANIZATION FOR STANDARDIZATION:

- ISO 9001:2015/ Quality Management System
- ISO 14001:2015/ Environmental Management System
- ISO 45001:2018/ Occupational Health and Safety Management System
- SA 8000 :2014/ Social Accountability International



THIS DATASHEET IS APPLICABLE FOR: PARADEA VSM DH.60.AAA.05 (AAA=590-615)

### ELECTRICAL PARAMETERS | STC<sup>1,2</sup>

Peak Power $P_{max}$ (Wp)	590	595	600	605	610	615
Maximum Voltage $V_{mpp}$ (V)	34.3	34.5	34.7	34.9	35.1	35.3
Maximum Current $I_{mpp}$ (A)	17.21	17.26	17.31	17.36	17.41	17.46
Open Circuit Voltage $V_{oc}$ (V)	41.3	41.5	41.7	41.9	42.1	42.3
Short Circuit Current $I_{sc}$ (A)	18.22	18.27	18.32	18.37	18.42	18.47
Module Efficiency (%)	20.85	21.02	21.2	21.38	21.55	21.73

<sup>1</sup>STC: 1000 W/M<sup>2</sup> IRRADIANCE, 25°C CELL TEMPERATURE, AM1.5G SPECTRUM ACCORDING TO EN 60904-3 | <sup>2</sup>TOLERANCE OF RATING AT STC ( $P_{max} / I_{sc} / V_{oc}$ ) [%]: 0-3/±5/±5 | ELECTRICAL MEASUREMENT UNCERTAINTY IS WITHIN ± 2%

### ELECTRICAL PARAMETERS | NOCT<sup>3</sup>

Peak Power $P_{max}$ (Wp)	440.4	443.9	447.9	451.7	455.5	459.3
Maximum Voltage $V_{mpp}$ (V)	31.7	31.9	32.1	32.2	32.3	32.4
Maximum Current $I_{mpp}$ (A)	13.88	13.92	13.97	14.01	14.06	14.10
Open Circuit Voltage $V_{oc}$ (V)	38.5	38.7	38.9	39.0	39.1	39.2
Short Circuit Current $I_{sc}$ (A)	14.72	14.76	14.79	14.84	14.88	14.91

<sup>3</sup>NOCT IRRADIANCE 800 W/M<sup>2</sup>, AMBIENT TEMPERATURE 20°C, WIND SPEED 1 M/SEC

### ELECTRICAL PARAMETERS | BNPI<sup>4,5</sup>

Peak Power $P_{max}$ (Wp)	646	651	657	662	668	673
Maximum Voltage $V_{mpp}$ (V)	34.3	34.5	34.7	34.9	35.1	35.3
Maximum Current $I_{mpp}$ (A)	18.84	18.89	18.95	19.00	19.06	19.11
Open Circuit Voltage $V_{oc}$ (V)	41.3	41.5	41.7	41.9	42.1	42.3
Short Circuit Current $I_{sc}$ (A)	19.94	20.00	20.05	20.11	20.16	20.22

<sup>4</sup>BNPI: 1000W/M<sup>2</sup>±φ.135, BIFACILITY COEFF. (φ) AT BNPI  $P_{max}$ ,  $I_{sc}$  IS 70±10% & FOR  $V_{oc}$  IS 99±10%, AM 1.5, 25°C | <sup>5</sup>TOLERANCE OF RATING AT BNPI ( $P_{max} / I_{sc} / V_{oc}$ ) [%]: 0-3/±5/±5

### TEMPERATURE COEFFICIENTS (Tc) PERMISSIBLE OPERATING CONDITIONS

Tc of Open Circuit Voltage (β)	-0.27%/°C
Tc of Short Circuit Current (α)	0.050%/°C
Tc of Power (γ)	-0.35%/°C
Maximum System Voltage	1500V
NOCT	45°C ± 2°C
Temperature Range	-40°C to + 85°C

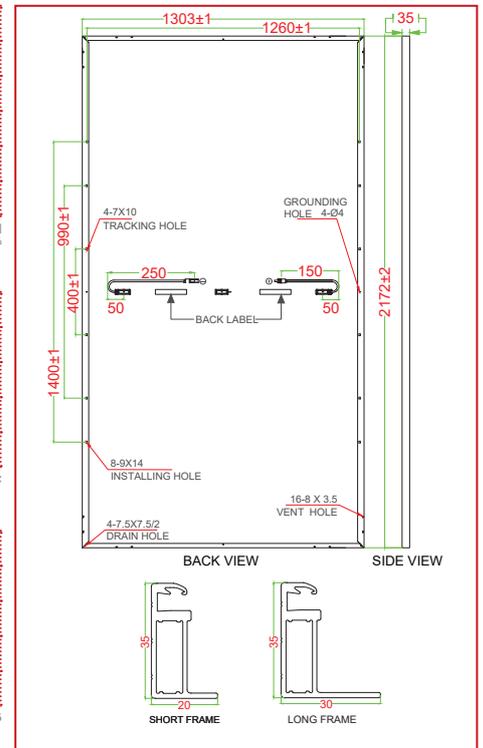
### MECHANICAL DATA

Length × Width × Height	2172 X 1303 X 35 mm (85.51 x 51.30 x 1.38 inches)
Weight	36.3 Kg (80.03lbs)
Junction Box	IP 68, Split Junction Box with individual bypass diodes
Cable & Connectors <sup>#</sup>	200 mm (+ve terminal) and 300 mm (-ve terminal) length cables, MC4 Compatible/MC4 Connectors
Application Class	Class A (Safety class II)
Superstrate <sup>#</sup>	2.0 mm (0.098 inches) High transmission ARC Semi-tempered glass (low iron content)
Cells	60 Mono PERC (120 half-cells) P-Type bifacial solar cells
Substrate	2.0 mm (0.098 inches) High transmission heat strengthened glass/ mesh glass <sup>#</sup> (low iron content)
Frame	Anodized aluminium/ Alloy steel frame <sup>#</sup>
Mechanical Load Test	5400 Pa (Snow load), 2400 Pa (Wind load)
Cell Encapsulant	EPE/ EVA
Maximum Series Fuse Rating	30 A
Hail Test	Ø 45mm   Impact Velocity up to 27m/s

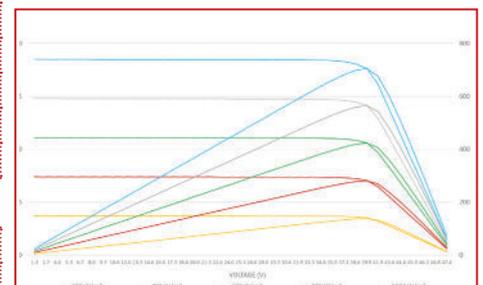
### WARRANTY

Product Warranty <sup>**</sup>	12 years
Performance Warranty <sup>**</sup>	Linear Power Warranty for 30 years with 2% for 1 <sup>st</sup> year degradation and 0.5% from year 2 to year 30

### DIMENSIONS IN MM

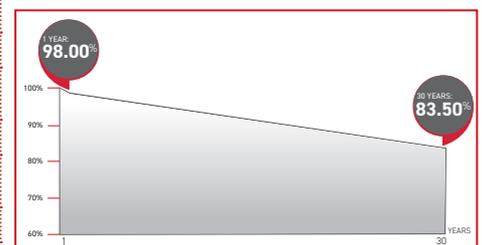


### TYPICAL I-V CURVES<sup>7</sup>



<sup>7</sup>AVERAGE RELATIVE EFFICIENCY REDUCTION OF 5% AT 200 W/M<sup>2</sup> ACCORDING TO EN 60904-1

### PERFORMANCE WARRANTY



### PACKAGING INFORMATION

Quantity /Pallet	31
Pallets/Container (40'HC)	18
Quantity/Container (40'HC)	558

<sup>#</sup>All (\*) certifications under progress. <sup>\*\*</sup>Refer to Vikram Solar's warranty document for terms and conditions. <sup>†</sup>400mm(15.75 inches), 1000mm(39.37 inches), 1200mm (47.24 inches) cable lengths are also available. <sup>\*\*</sup>Anti-glare Glass is also available. <sup>\*</sup>As per applicable product. <sup>††</sup>With additional Cost & Lead Time subject to availability | STC : Standard Testing Condition | BNPI : Bifacial Nameplate Irradiance | NOCT : Nominal Operating Cell Temperature

CAUTION: READ SAFETY AND INSTALLATION MANUAL BEFORE USING THE PRODUCT.

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