PARADEA

HIGH EFFICIENCY BI-FACIAL GLASS-GLASS PV MODULES

Mono PERC N-TYPE HJT

MODEL:
PARADEA VSMDH.60.AAA.05

590-615W

SUBSTRATE
GLASS ●
MESH GLASS ●

FRAME TYPE
ALUMINIUM ●

FRAME VARIANT
SILVER ●
BLACK ●

MAXIMUM EFFICIENCY %	CELL TYPE	PRODUCT WARRANTY	PERFORMANCE WARRANTY
21.73	G12 HALF CUT	12 YEARS	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

DCR CONTENT MODULE AVAILABLE

vikramsolar
CREATING CLIMATE FOR CHANGE

Monocrystalline Solar PV Modules, Bifacial, G12 MonoPerc

vikramsolar
CREATING CLIMATE FOR CHANGE

Mono PERC N-TYPE HJT

TECHNICAL DATA
PARADEA 590-615W

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

ELECTRICAL PARAMETERS | STC[1,2]

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

1)STC:1000 W/M² IRRADIANCE, 25°C CELL TEMPERATURE, AM1.5G SPECTRUM ACCORDING TO EN 60904-3 | 2) TOLERANCE OF RATING AT STC (P_{MPP} / I_{SC} / V_{OC}) [%] : 0-3/±5/±5| ELECTRICAL MEASUREMENT UNCERTAINTY IS WITHIN ± 2%

ELECTRICAL PARAMETERS | NOCT[3]

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

3)NOCT IRRADIANCE 800 W/M², AMBIENT TEMPERATURE 20°C, WIND SPEED 1 M/SEC

ELECTRICAL PARAMETERS | BNPI[4,5]

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

4) BNPI: 1000W/M²+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 | 5) TOLERANCE OF RATING AT BNPI (P_{MPP}/ 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

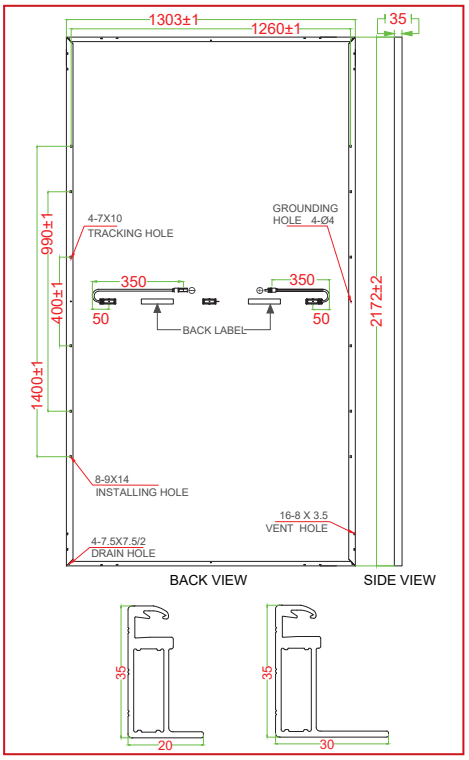
MECHANICAL DATA

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#	400 mm (+ve terminal) and 400 mm (-ve terminal) length cables,MC4 Compatible/Staubli EVO connectors
Application Class	Class A (Safety class II)
Superstrate##	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#* (low iron content)
Frame	Anodized aluminium
Mechanical Load Test	5400 Pa (Snow load), 2400 Pa (Wind load)
Cell Encapsulant	EVA/EPE
Maximum Series Fuse Rating	30 A
Hail Test	Ø 45mm | Impact Velocity up to 27m/s

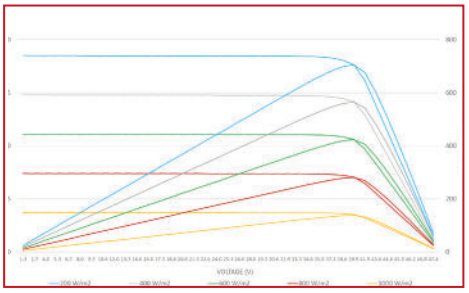
WARRANTY

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

DIMENSIONS IN MM

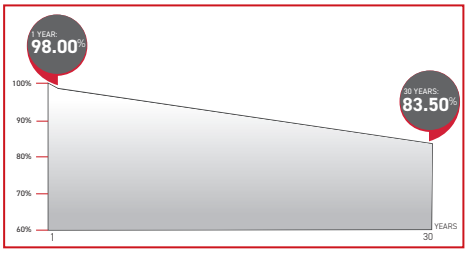


TYPICAL I-V CURVES[7]



7) AVERAGE RELATIVE EFFICIENCY REDUCTION OF 5% AT 200 W/M² ACCORDING TO EN 60904-1

PERFORMANCE WARRANTY



PACKAGING INFORMATION

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

^All (^) certifications under progress. | **Refer to Vikram Solar's warranty document for terms and conditions. | #400mm(15.75 inches), 1000mm(39.37 inches),1200mm (47.24 inches) cable lengths are also available | ##Anti-glare Glass is also available | *As per applicable product | #*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.

Specifications included in this datasheet are subject to change without notice. Electrical data without guarantee. Please confirm your exact requirement with the company representative while placing your order.
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