

PARADEA

HIGH EFFICIENCY BI-FACIAL GLASS-GLASS PV MODULES

535-560W

MAXIMUM EFFICIENCY %

21.72

POSITIVE POWER TOLERANCE WP

0~+4.99

CELLS

M10 144

MODULE TECHNOLOGY

HALF CUT & MICRO GAP DESIGN

WITH IMPROVED SHADE TOLERANCE



RELIABILITY IS IMPROVED with minimum exposure to corrosion from sand & salt mist with low risk of module warping & micro cracking



Bifacial gain of **UP TO 25%** with dual glass module, capable of energy generation with both direct and reflected sunlight



Additional Power yield with **30 YEARS OF PERFORMANCE LIFE** with 0.5% annual power degradation



LCOE IS CUT BACK with **LESS BOS COST** which improves value proposition of the product with competitive **ROI**



TWO PEAK PERFORMANCE TIME, during sun rise and sun set with optimum utilization of dual facial generation



Hassle-free installation with ability to **INSTALL VERTICALLY IN EAST WEST DIRECTION**, with improved soiling resistant



Implementation of bypass diodes in split JB series-parallel connections enable the module to perform in **PARTIAL SHADOW CONDITIONS** with respect to full-cell module



LOWER INTERNAL RESISTANCE boosts module power helping to achieve minimal power loss with respect to previous variant modules



FRAME

SILVER

SUPERSTRATE

GLASS

SUBSTRATE

GLASS

APPLICATIONS

- On-grid large scale utility systems
- On-grid rooftop industrial and commercial systems
- Rooftop residential systems



DCR CONTENT MODULE AVAILABLE

THIS DATASHEET IS APPLICABLE FOR: PARADEA VSMDH.72.AAA.05 (AAA=535-560)

Electrical Data^{1,2} All data refers to STC (AM 1.5, 1000 W/m², 25°C)

Peak Power P _{max} (Wp)	535	540	545	550	555	560
Maximum Voltage V _{mpp} (V)	41.6	41.7	41.8	41.9	42	42.1
Maximum Current I _{mp} (A)	12.87	12.96	13.05	13.14	13.23	13.32
Open Circuit Voltage V _{oc} (V)	49.4	49.5	49.6	49.7	49.8	49.9
Short Circuit Current I _{sc} (A)	13.56	13.64	13.73	13.82	13.95	14.05
Module Efficiency (%)	20.75	20.94	21.13	21.33	21.52	21.72

1) STC:1000 W/m² irradiance, 25°C cell temperature, AM1.5g spectrum according to EN 60904-3. | 2) Power measurement uncertainty is within +/- 2%.

Electrical Parameters at NOCT³

Power (W)	399.20	402.80	406.70	410.60	414.20	418.10
V@P _{max} (V)	38.40	38.40	38.70	38.80	39.10	39.20
I@P _{max} (A)	10.39	10.48	10.51	10.58	10.59	10.66
V _{oc} (V)	46.00	46.00	46.20	46.20	46.70	46.80
I _{sc} (A)	10.96	11.06	11.09	11.17	11.17	11.24

3) NOCT irradiance 800 W/m², ambient temperature 20°C, wind speed 1 m/sec

Equivalent Bifacial Output

Bifacial Gain	Overall Power output (W)					
5%	551	557	562	567	572	578
10%	578	583	589	594	600	605
15%	604	610	615	621	627	633
20%	630	636	642	648	654	660
25%	656	663	669	675	681	688

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	2274 × 1134 × 30mm (89.52 × 44.65 × 1.18 inches)
Weight	33 Kg (72.75 lbs)
Junction Box	IP68, Split Junction Box with individual bypass diodes
Cable & Connectors*	200 mm (+ve terminal) and 300 mm (-ve terminal) length cables, MC4 Compatible/MC4 Connectors
Application Class	Class A (Safety class II)
Superstrate**	2.0 mm (0.098 inches) high transmission low iron content, semi-tempered glass, AR coated
Cells	72 Mono PERC (144 half-cells) P-Type Bifacial solar cells
Substrate	2.0 mm (0.098 inches) high transmission low iron content, heat strengthened glass
Frame	Anodized aluminium frame with twin wall profile
Mechanical Load Test	5400 Pa (Snow load), 2400 Pa (Wind load)
Cell Encapsulant	Polyolefin (POE)/ EPE
Maximum Series Fuse Rating	25 A

Power measurement uncertainty is within ±2mm.

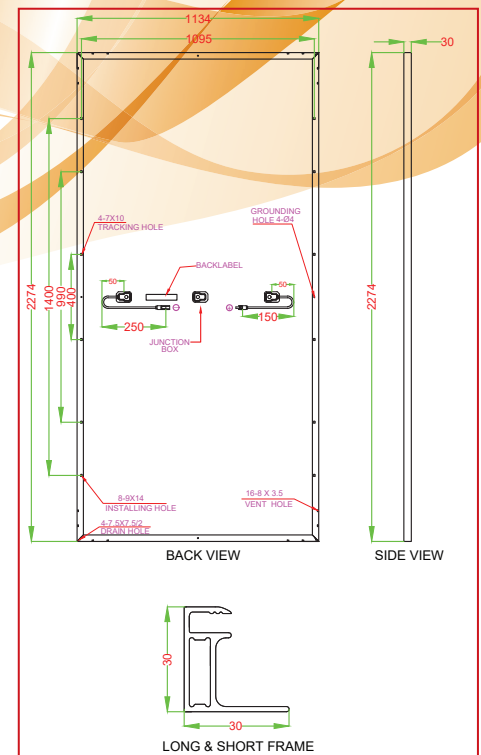
Warranty and Certifications

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
Approvals and Certificates^	IEC 61215 : 2016, IEC 61730 : 2016, IEC 61701, IEC 62716, IEC 60068-2-68, IS/IEC 61730, IS 14286, IEC 62804, CE, CEC (California), UL 61215, UL 61730, CAN-CSA

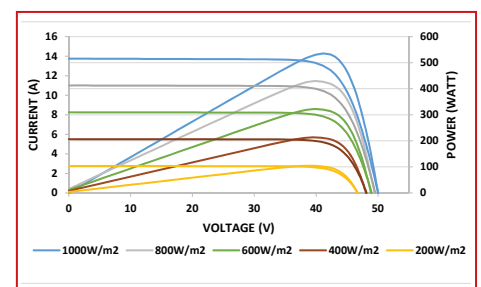
CAUTION: READ SAFETY AND INSTALLATION MANUAL BEFORE USING THE PRODUCT.

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. Vikram Solar and all its accompanying logos are trademarks of Vikram Solar Limited registered in India.

Dimensions in mm

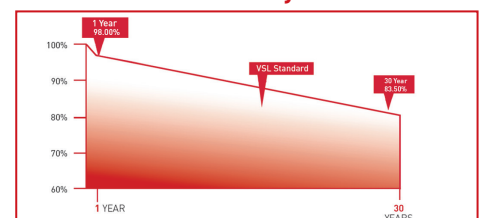


Typical I-V Curves⁴



4) Average relative efficiency reduction of 5% at 200 W/m² according to EN 60904-1.

Performance Warranty



Packaging Information

Quantity /Pallet	36
Pallets/Container (40'HC)	20
Quantity/Container (40'HC)	720

* 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

PARADEA

HIGH EFFICIENCY BI-FACIAL GLASS-GLASS PV MODULES

580-605W

MAXIMUM EFFICIENCY %

21.38

POSITIVE POWER TOLERANCE WP

0~+4.99

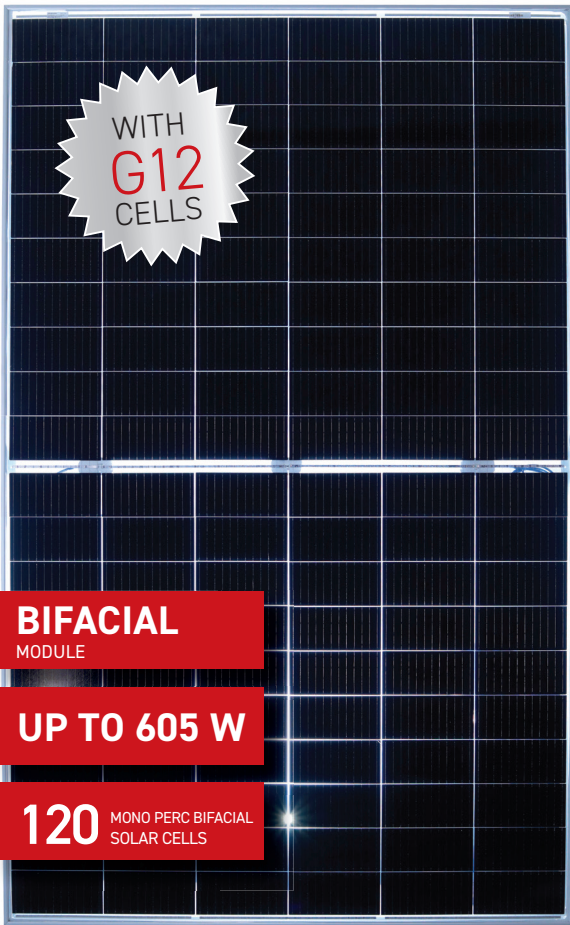
CELLS

G12 120

MODULE TECHNOLOGY

HALF CUT & MICRO GAP DESIGN

WITH IMPROVED SHADE TOLERANCE



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CREATING CLIMATE FOR CHANGE

THIS DATASHEET IS APPLICABLE FOR: PARADEA VSMDH.60.AAA.05 (AAA= 580-605)

Electrical Data^{1,2} All data refers to STC (AM 1.5, 1000 W/m², 25°C)

Peak Power P _{max} (Wp)	580	585	590	595	600	605
Maximum Voltage V _{mpp} (V)	36.7	36.8	36.9	37	37.1	37.2
Maximum Current I _{mpp} (A)	15.81	15.9	15.99	16.09	16.18	16.27
Open Circuit Voltage V _{oc} (V)	43.1	43.2	43.3	43.4	43.5	43.6
Short Circuit Current I _{sc} (A)	16.99	17.07	17.16	17.25	17.34	17.4
Module Efficiency (%)	20.49	20.67	20.85	21.02	21.20	21.38

1) STC:1000 W/m² irradiance, 25°C cell temperature, AM1.5g spectrum according to EN 60904-3. 1.2) Power measurement uncertainty is within +/- 2%.

Electrical Parameters at NOCT³

Power (W)	434.7	438.1	441.7	445.4	449	452.3
V@P _{max} (V)	33.4	33.5	33.6	33.7	33.8	33.9
I@P _{max} (A)	13.02	13.09	13.16	13.23	13.3	13.34
V _{oc} (V)	40.1	40.2	40.3	40.4	40.5	40.5
I _{sc} (A)	13.74	13.81	13.88	13.95	14.02	14.07

3) NOCT irradiance 800 W/m², ambient temperature 20°C, wind speed 1 m/sec

Equivalent Bifacial Output

Bifacial Gain	Overall Power output (W)					
5%	609	614	620	625	630	635
10%	638	644	649	655	660	666
15%	667	673	679	684	690	696
20%	696	702	708	714	720	726
25%	725	731	738	744	750	756

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 (80.03 lbs)
Junction Box	IP 68, Split Junction Box with individual bypass diodes
Cable & Connectors [#]	200 mm (+ve terminal) and 300 mm(-ve terminal) length cables, MC4 Compatible/ MC4 Connectors
Application Class	Class A (Safety class II)
Superstrate ^{##}	2.0 mm (0.098 inches) high transmission low iron content, semi-tempered glass, AR coated
Cells	60 Mono PERC (120 half-cells) P-Type Bifacial solar cells
Substrate	2.0 mm (0.098 inches) high transmission low iron content, heat strengthened glass
Frame	Anodized aluminium frame with twin wall profile
Mechanical Load Test	5400 Pa (Snow load), 2400 Pa (Wind load)
Encapsulant	Polyolefin (POE)/ EPE
Maximum Series Fuse Rating	30 A

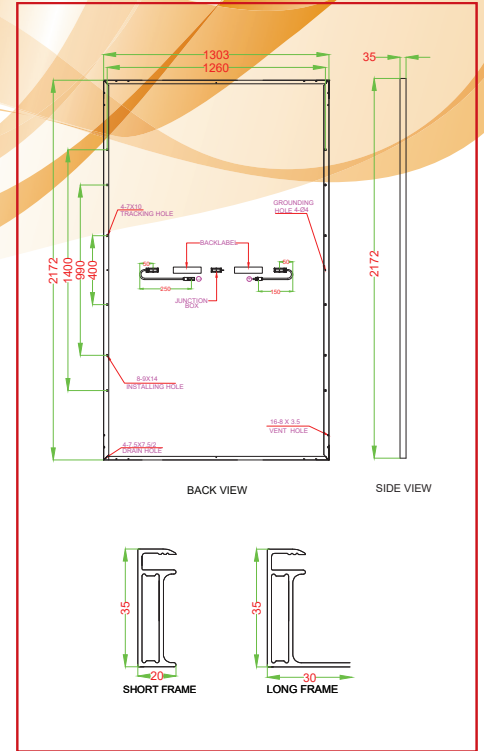
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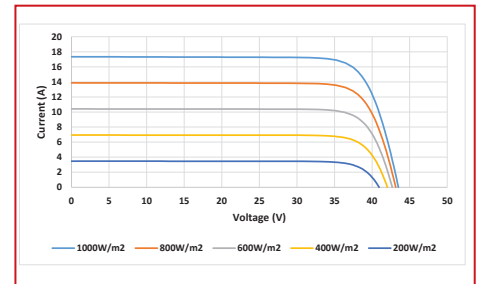
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Dimensions in mm

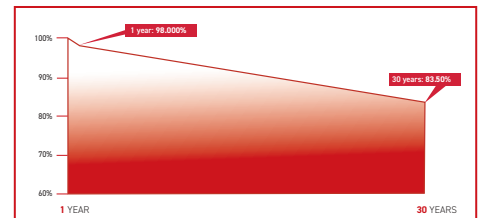


Typical I-V Curves⁴



4) 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)	17
Quantity/Container (40'HC)	527

[^] 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