

PARADEA

HIGH EFFICIENCY BI-FACIAL GLASS-GLASS PV MODULES

635-660W

MAXIMUM EFFICIENCY %

21.18

POSITIVE POWER TOLERANCE WP

0~+4.99

CELLS

M12 132

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

THIS DATASHEET IS APPLICABLE FOR: PARADEA VSMDH.66.AAA.05 (AAA= 635-660)

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

Peak Power P _{max} (Wp)	635	640	645	650	655	660
Maximum Voltage V _{mpp} (V)	37.3	37.4	37.5	37.6	37.7	37.8
Maximum Current I _{mp} (A)	17.03	17.12	17.20	17.29	17.38	17.47
Open Circuit Voltage V _{oc} (V)	45.8	45.9	46	46.1	46.2	46.3
Short Circuit Current I _{sc} (A)	17.76	17.85	17.93	18.02	18.1	18.17
Module Efficiency (%)	20.38	20.54	20.70	20.86	21.02	21.18

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)	474	478.3	481.9	485.6	489	493.5
V@P _{max} (V)	35.1	35.2	35.3	35.4	35.5	35.6
I@P _{max} (A)	13.53	13.59	13.66	13.72	13.78	13.85
V _{oc} (V)	42.70	42.80	42.90	43.00	43.10	43.10
I _{sc} (A)	14.35	14.42	14.49	14.60	14.68	14.68

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%	667	672	677	683	688	693
10%	699	704	710	715	721	726
15%	730	736	742	748	753	759
20%	762	768	774	780	786	792
25%	794	800	806	813	819	825

Temperature Coefficients (Tc) permissible operating conditions

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

Mechanical Data

Length × Width × Height	2391 X 1303 X 35 mm (94.13 x 51.30 x 1.38 inches)
Weight	39.3 Kg (86.64 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	66 Mono PERC (132 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)
Maximum Series Fuse Rating	30 A

Warranty and Certifications

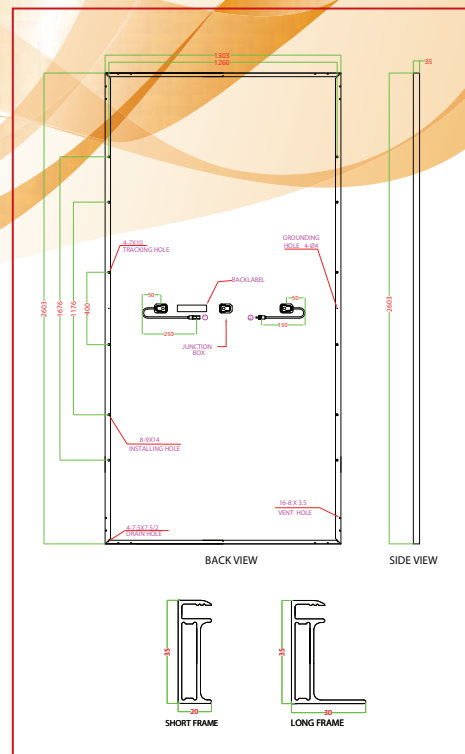
Product Warranty ^{**}	12 years
Performance Warranty ^{**}	Linear Power Warranty for 30 years with 2% for 1st year degradation and 0.5% from year 2 to year 30
Approvals and Certificates [^]	IEC 61215 : 2016, IEC 61730 : 2016, IEC 61701, IEC 62716, IEC 60068-2-68, IS/IEC 61730-1, IS/IEC 61730-2, IS 14286, IEC 62804, CE, CEC (California), UL 61215 , UL 61730, CAN-CSA

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

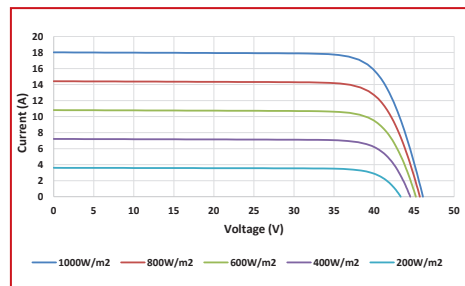
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Dimensions in mm

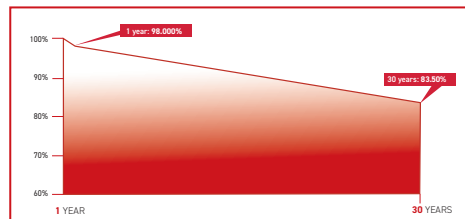


Typical I-V Curves⁴



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