

460-485W

SUBSTRATE
GLASS ●
MESH GLASS ●

FRAME TYPE
ALUMINIUM ●

FRAME VARIANT
SILVER ●
BLACK ●

MAXIMUM EFFICIENCY %

22.44

CELL TYPE

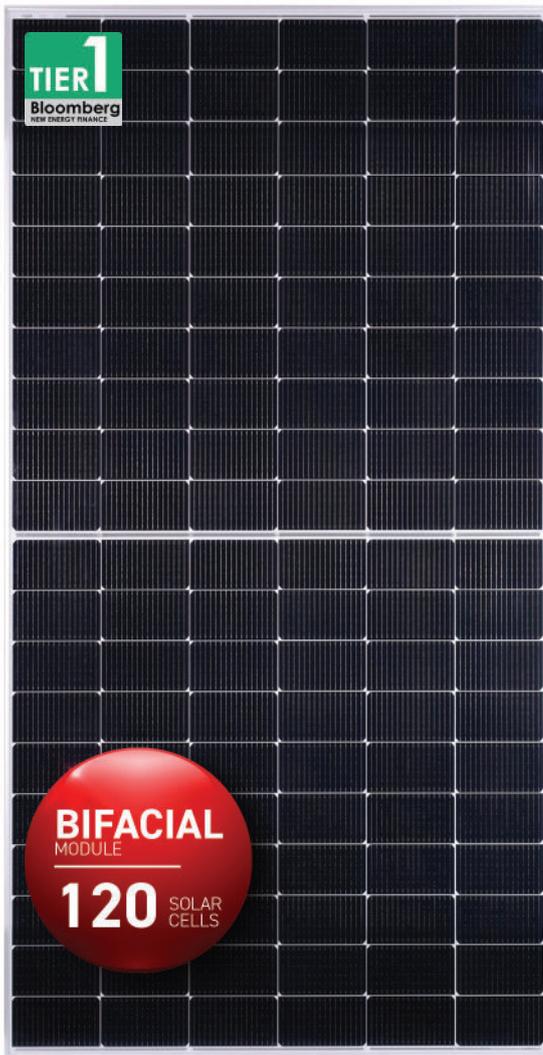
M10 HALF CUT

PRODUCT WARRANTY

12 YEARS

PERFORMANCE WARRANTY

30 YEARS



0% NEGATIVE POWER TOLERANCE

- Positive power tolerance of upto 0 ~ 4.99Wp
- Module I_{mp} binning radically reduces string mismatch losses



IMPROVED LONGEVITY

- Excellent anti-PID performance via optimized process and materials control
- Lower susceptibility to LID & LeTID



LOWER LCOE

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



HIGHLY AUTOMATED PRODUCTION LINE

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



SUPERIOR HAIL TEST PERFORMANCE

- ø 40mm hail test passed from third party laboratory

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: HYPERSOL VSM DH.60.AAA.05 (AAA=460-485)

ELECTRICAL PARAMETERS | STC^{1,2}

Peak Power P _{max} (Wp)	460	465	470	475	480	485
Maximum Voltage V _{mpp} (V)	34.75	34.95	35.15	35.35	35.55	35.75
Maximum Current I _{mpp} (A)	13.25	13.32	13.38	13.45	13.51	13.57
Open Circuit Voltage V _{oc} (V)	41.45	41.65	41.85	42.05	42.25	42.5
Short Circuit Current I _{sc} (A)	13.9	13.96	14.02	14.08	14.14	14.2
Module Efficiency (%)	21.28	21.51	21.75	21.98	22.21	22.44

¹STC: 1000 W/M² IRRADIANCE, 25°C CELL TEMPERATURE, AM1.5G SPECTRUM ACCORDING TO EN 60904-3 | ² TOLERANCE OF RATING AT STC (P_{max} / I_{sc} / V_{oc}) [%]: 0.3/+10/+10 | ELECTRICAL MEASUREMENT UNCERTAINTY IS WITHIN ± 2%

ELECTRICAL PARAMETERS | NOCT³

Peak Power P _{max} (Wp)	346.70	352.00	355.50	358.80	362.30	365.10
Maximum Voltage V _{mpp} (V)	32.50	32.90	33.10	33.20	33.40	33.50
Maximum Current I _{mpp} (A)	10.66	10.70	10.77	10.80	10.85	10.89
Open Circuit Voltage V _{oc} (V)	39.00	39.20	39.30	39.50	39.70	39.90
Short Circuit Current I _{sc} (A)	11.23	11.28	11.33	11.37	11.42	11.47

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)	509.7	515.2	520.8	526.3	531.8	537.4
Maximum Voltage V _{mpp} (V)	34.8	35.0	35.2	35.4	35.6	35.8
Maximum Current I _{mpp} (A)	14.68	14.76	14.83	14.90	14.97	15.04
Open Circuit Voltage V _{oc} (V)	41.5	41.7	41.9	42.1	42.3	42.5
Short Circuit Current I _{sc} (A)	15.40	15.47	15.53	15.60	15.67	15.73

⁴ BNPI: 1000W/M² ± 0.135, BIFACILITY COEFF. (β) AT BNPI P_{max}, I_{sc} IS 75±5% & FOR V_{oc} IS 99±10%, AM 1.5, 25°C | ⁵ TOLERANCE OF RATING AT BNPI (P_{max} / I_{sc} / V_{oc}) [%]: 0.3/+10/+10

TEMPERATURE COEFFICIENTS (Tc) PERMISSIBLE OPERATING CONDITIONS

Tc of Open Circuit Voltage (β)	-0.26%/°C
Tc of Short Circuit Current (α)	0.046%/°C
Tc of Power (γ)	-0.30%/°C
Maximum System Voltage	1500V
NOCT	45°C ± 2°C
Temperature Range	-40°C to + 85°C

MECHANICAL DATA

Length × Width × Height	1906 X 1134 X 30 mm (75.04 x 44.65 x 1.18 inches)
Weight	28.1 Kg (61.73 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 ARC Semi-tempered glass (low iron content)
Cells	60 (120 half-cells) N-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	EPE/ EVA
Maximum Series Fuse Rating	30A
Hail Test	Ø 40mm

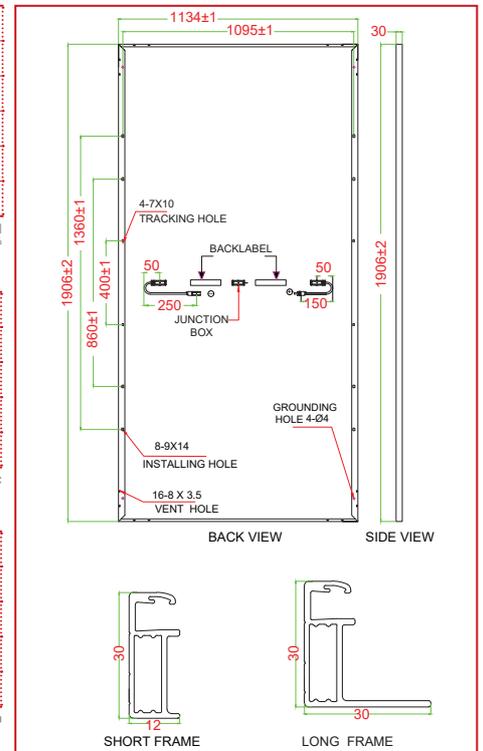
WARRANTY

Product Warranty ^{**}	12 years
Performance Warranty ^{**}	Linear Power Warranty for 30 years with 1% for 1 st year degradation and 0.4% from year 2 to year 30

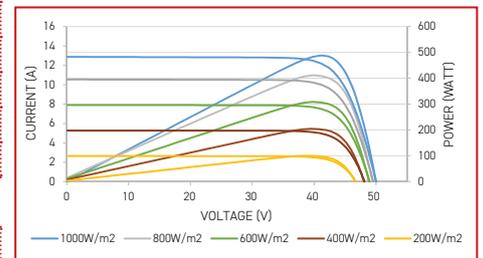
CAUTION: READ SAFETY AND INSTALLATION MANUAL BEFORE USING THE PRODUCT.

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DIMENSIONS IN MM

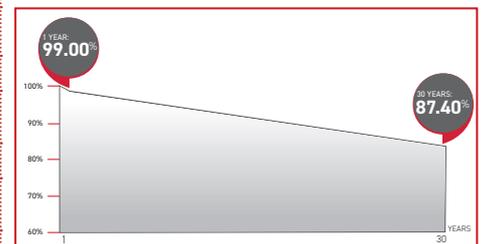


TYPICAL I-V CURVES⁶



⁶ 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)	24
Quantity/Container (40'HC)	864

^{*}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. ^{††}With additional Cost & Lead Time subject to availability | STC: Standard Testing Condition | BNPI: Bifacial Nameplate Irradiance | NOCT: Nominal Operating Cell Temperature