

415-440W

SUBSTRATE
GLASS ●
MESH GLASS ●

FRAME TYPE
ALUMINIUM ●
STEEL ●

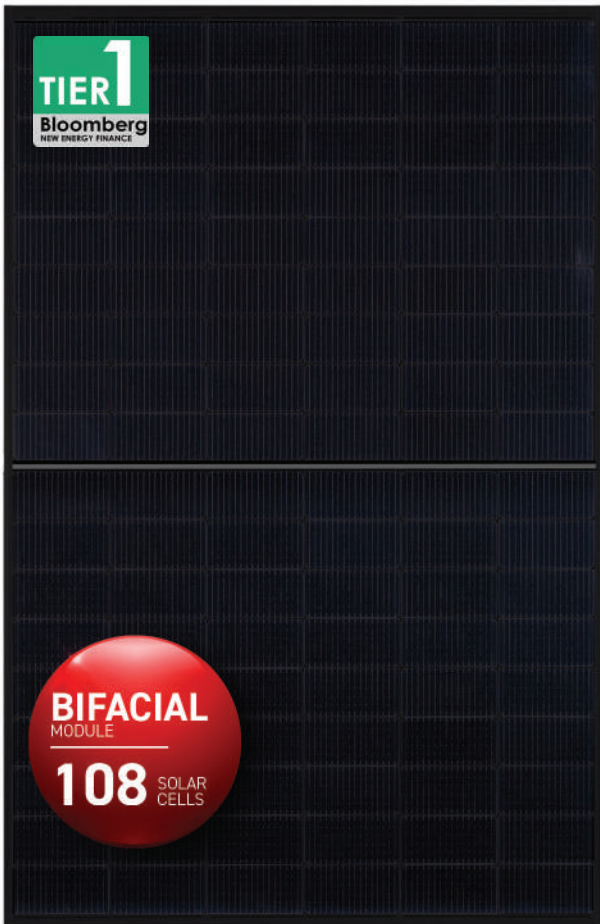
FRAME VARIANT
SILVER ●
BLACK ●

MAXIMUM EFFICIENCY %
22.02

CELL TYPE
M10 HALF CUT

PRODUCT WARRANTY
12 YEARS

PERFORMANCE WARRANTY
30 YEARS



SUITED FOR ROOFTOP INSTALLATION

- Light weight modules
- Aesthetically appealing with higher efficiency



IMPROVED LONGEVITY

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



PROLONGED SAFETY ASSURANCE

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



HIGHLY AUTOMATED PRODUCTION LINE

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



PREMIUM PERFORMANCE PARAMETERS

- Topcon solar cell upto 85% bifaciality, brings higher energy yield from rear side
- Lower temperature coefficient minimizing generation losses at high temperature

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.54.AAA.05 (AAA=415-440)

ELECTRICAL PARAMETERS | STC^{1,2}

Peak Power P _{max} (Wp)	415	420	425	430	435	440
Maximum Voltage V _{mpp} (V)	32.39	32.62	32.84	33.07	33.29	33.52
Maximum Current I _{mpp} (A)	12.82	12.88	12.95	13.02	13.08	13.15
Open Circuit Voltage V _{oc} (V)	38.7	38.91	39.12	39.33	39.54	39.75
Short Circuit Current I _{sc} (A)	13.59	13.65	13.72	13.78	13.85	13.91
Module Efficiency (%)	20.77	21.02	21.27	21.52	21.77	22.02

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_{max} / I_{sc} / V_{oc}) [%]: 0-3/±5/±5 | ELECTRICAL MEASUREMENT UNCERTAINTY IS WITHIN ± 2%

ELECTRICAL PARAMETERS | NOCT³

Peak Power P _{max} (Wp)	313.2	316.9	320.8	324.6	328.4	332.2
Maximum Voltage V _{mpp} (V)	30.1	30.3	30.5	30.7	30.9	31.1
Maximum Current I _{mpp} (A)	10.41	10.45	10.51	10.56	10.61	10.66
Open Circuit Voltage V _{oc} (V)	36.4	36.6	36.8	37	37.2	37.4
Short Circuit Current I _{sc} (A)	10.98	11.02	11.08	11.13	11.18	11.23

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)	460	465	471	477	482	488
Maximum Voltage V _{mpp} (V)	32.4	32.5	32.5	32.6	32.7	32.7
Maximum Current I _{mpp} (A)	14.2	14.3	14.5	14.6	14.8	14.9
Open Circuit Voltage V _{oc} (V)	38.5	38.9	39.3	39.7	40.1	40.5
Short Circuit Current I _{sc} (A)	15	15.2	15.4	15.6	15.8	16.1

4) BNPI: 1000W/M²±q.135, BIFACILITY COEFF. (q) AT BNPI P_{max}, I_{sc} IS 80±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/±5/±5

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

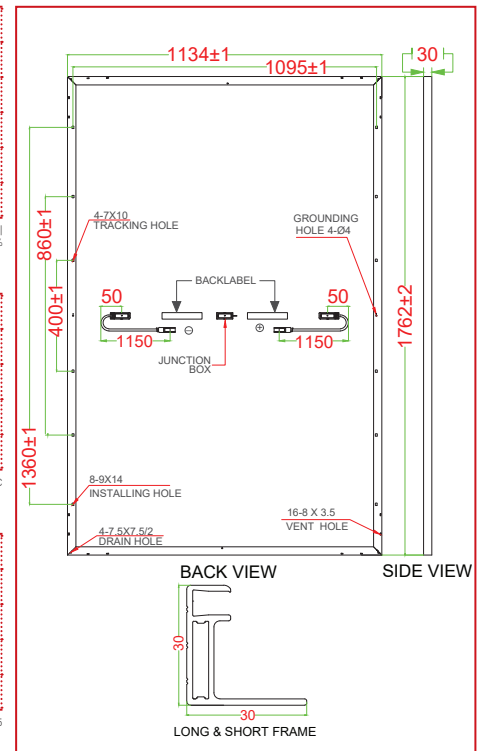
MECHANICAL DATA

Length × Width × Height	1762 X 1134 X 30 mm (69.37 x 44.65 x 1.18 inches)
Weight**	21.75 Kg (47.95lbs)
Junction Box	IP 68, Split Junction Box with individual bypass diodes
Cable & Connectors**	1200 mm (+ve terminal) and 1200 mm (-ve terminal) length cables, Stäubli MC4 EVO2 Connectors
Application Class	Class A (Safety class II)
Superstrate**	1.6 mm** (0.063 Inches) high transmission ARC semi-tempered glass (Low iron content)
Cells	54 (108 half-cells) 16BB TOPCon n-Type Bifacial solar cells
Substrate**	1.6 mm** (0.063 Inches) high transmission heat strengthened glass/ mesh glass** (Low iron content)
Frame	Anodized aluminium/ Alloy steel frame**
Mechanical Load Test	5400 Pa (Snow load), 2400 Pa (Wind load)
Cell Encapsulant	EPE/ EVA
Maximum Series Fuse Rating	30 A

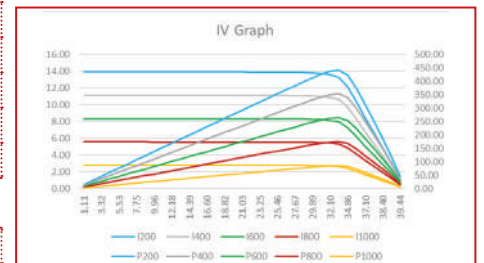
WARRANTY

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

DIMENSIONS IN MM

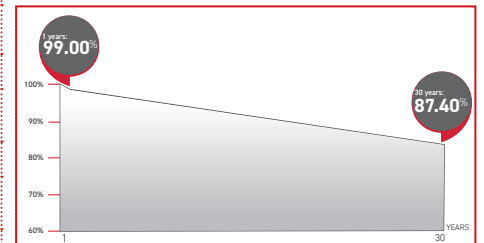


TYPICAL I-V CURVES⁶



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)	26
Quantity/Container (40'HC)	936

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 | **2mm glass also available | ** Weight for 2mm glass module 25.10kg | ** Black and White mesh glass also available

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

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