

# somera

## SERIES 10

Monocrystalline Solar PV Modules, Monofacial, MBB, M10 Half-Cell, SOMERA VSMHBB.60.AAA.05

POWER OUTPUT WATT	MAXIMUM EFFICIENCY %	POSITIVE POWER TOLERANCE WP	CELLS (HALF CUT)
410-435	20.13	0~+4.99	M10 120



**CYLINDRICAL TABBING WIRE** is used to reduce the shadow on cell active area



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



**HIGHER NUMBER OF BUSBAR** makes the PV modules less prone to loss in efficiency and increase tolerance to micro cracks



**FIELD RELIABILITY** is improved due to multiple contact points on the cell which lowers the cell stress during module fabrication



**LCOE IS CUT BACK** by using M10 size solar cell with adding more power output than lower size cell module

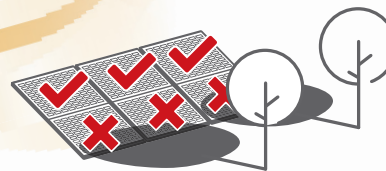


**LOWER INTERNAL RESISTANCE** boosts module power helping to achieve minimal power loss with respect to previous variant modules



**GREAT AESTHETICS FOR DARK ROOFS ALL BLACK** module can increase the aesthetic value of your home with a more modern design

### SHADE TOLERANCE



**HALF-CELL MODULE** Functions like two parallel modules, enabling the half-cell string to work in partial shading which is absent in full cell module



### APPLICATIONS

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

FRAME

BLACK

SILVER

BACKSHEET

BLACK

WHITE

TRANSPARENT

THIS DATASHEET IS APPLICABLE FOR: SOMERA VSMHBB.60.AAA.05 (AAA= 410-435)

### Electrical Data<sup>1,2</sup> All data refers to STC (AM 1.5, 1000 W/m<sup>2</sup>, 25°C)

Parameter	410	415	420	425	430	435
Peak Power P <sub>max</sub> (Wp)	410	415	420	425	430	435
Maximum Voltage V <sub>mpp</sub> (V)	33.9	34.1	34.3	34.5	34.7	34.8
Maximum Current I <sub>mp</sub> (A)	12.10	12.18	12.25	12.32	12.41	12.52
Open Circuit Voltage V <sub>oc</sub> (V)	40.2	40.4	40.6	40.8	41.0	41.1
Short Circuit Current I <sub>sc</sub> (A)	12.72	12.81	12.90	12.99	13.11	13.21
Module Efficiency η(%)	18.97	19.20	19.43	19.66	19.89	20.13

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

### Electrical Parameters at NOCT<sup>3</sup>

Parameter	306.1	309.8	313.3	317	320	324
Power (W)	306.1	309.8	313.3	317	320	324
V@P <sub>max</sub> (V)	31.4	31.6	31.7	31.8	31.9	32
I@P <sub>max</sub> (A)	9.75	9.82	9.88	9.96	10.04	10.11
V <sub>oc</sub> (V)	37.4	37.6	37.8	38	38.1	38.2
I <sub>sc</sub> (A)	10.28	10.35	10.42	10.52	10.62	10.7

3) NOCT irradiance 800 W/m<sup>2</sup>, ambient temperature 20°C, wind speed 1 m/sec

### 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

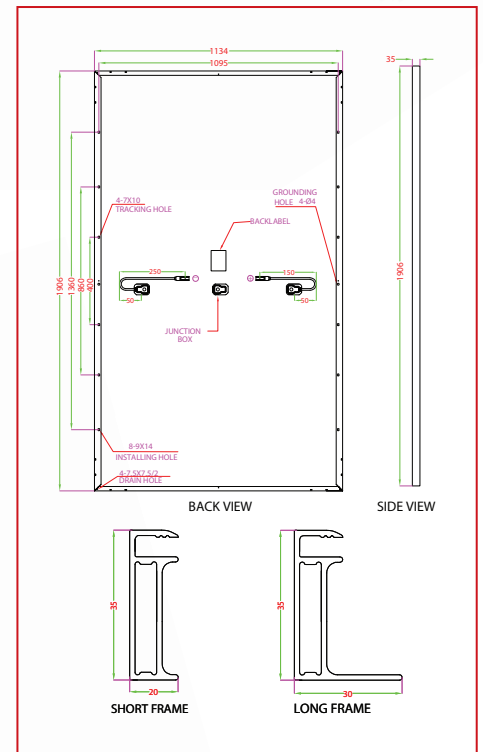
Length × Width × Height	1906 X 1134 x 35 mm [75.04 X 44.65 X 1.38 inches]
Weight	24.0 Kg [52.91lbs]
Junction Box	IP68, Split Junction Box with individual bypass diodes
Cable & Connectors <sup>#</sup>	200 mm (+ve terminal) and 300 mm (-ve terminal) length cables, MC4 Compatible/MC4 Connectors
Application Class	Class A (Safety class II)
Superstrate	3.2 mm [0.125 inches] high transmission low iron tempered glass, AR coated
Cells	60 Mono PERC (120 half-cells) P-type solar cells
Back Sheet	Composite film
Frame	Anodized aluminium frame with twin wall profile
Mechanical Load Test	5400 Pa (Snow load), 2400 Pa (Wind load)
Maximum Series Fuse Rating	25 A

### Warranty and Certifications

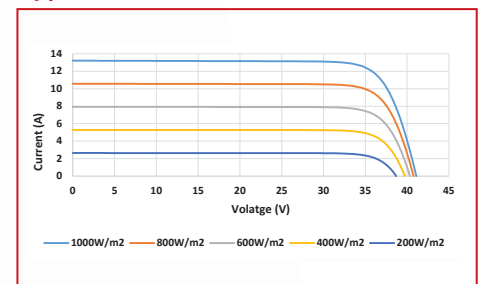
Product Warranty**	12 years
Performance Warranty**	Linear Power Warranty for 27 years with 2% for 1st year degradation and 0.55% from year 2 to year 27
Approvals and Certificates ^	IEC 61215 : 2016, IEC 61730 : 2016, IEC 61701, IEC 62716, CE, IEC 60068-2-68, IEC 62804, CEC (California), UL 61215, UL 61730, CAN-CSA

^ 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

### Dimensions in mm

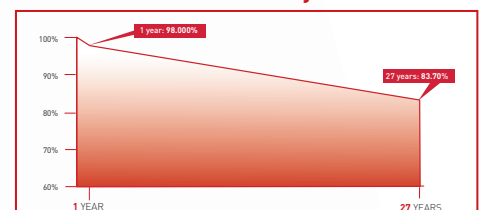


### Typical I-V Curves<sup>4</sup>



4) Average relative efficiency reduction of 5% at 200 W/m<sup>2</sup> according to EN 60904-1.

### Performance Warranty



### Packaging Information

Quantity /Pallet	31
Pallets/Container (40'HC)	24
Quantity/Container (40'HC)	744

**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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