

somera

HIGH EFFICIENCY MONOFACIAL PV MODULES

410-435W

MAXIMUM EFFICIENCY %

20.13

POSITIVE POWER TOLERANCE WP

0~+4.99

CELLS

M10 120

MODULE TECHNOLOGY

HALF CUT & MICRO GAP DESIGN

WITH IMPROVED SHADE TOLERANCE



CYLINDRICAL TABBING WIRE increases cell absorption by enhancing scattering effects



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



FRAME

BLACK

SUPERSTRATE

GLASS

SUBSTRATE

**BACKSHEET
BLACK**

APPLICATIONS

On-grid large scale utility systems

On-grid rooftop industrial and commercial systems

Rooftop residential systems

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

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

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

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

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

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

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 |

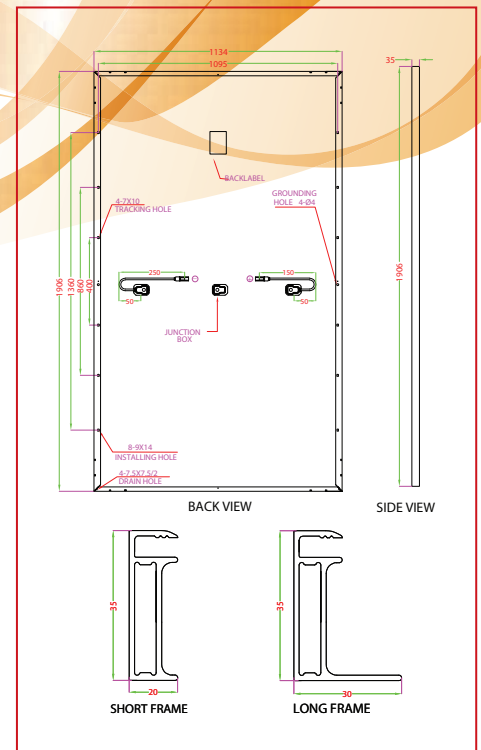
Mechanical Data

| | |
|---------------------------------|---|
| Length × Width × Height | 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 [#] | 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 |

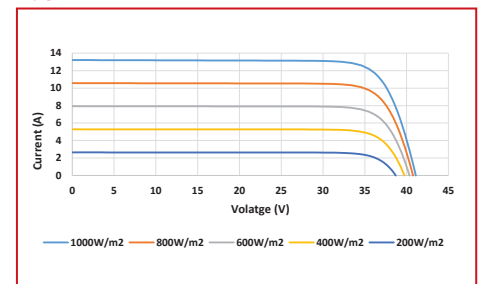
Warranty and Certifications

| | |
|---|--|
| 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 |

Dimensions in mm

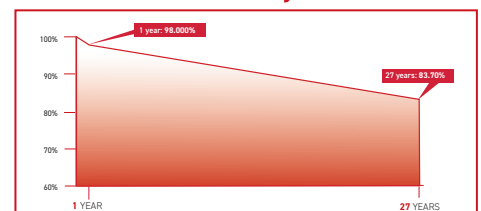


Typical I-V Curves⁴



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) | 24 |
| Quantity/Container (40'HC) | 744 |

[^] 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

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

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