Naps Systems’ 30 years of solar power experience in all continents and conditions provide the highest level of quality and power in an attractive and dependable package.

**High power and efficiency**

Naps Pallas series of solar modules contain 54 high efficiency polycrystalline solar cells. The cells are carefully selected to assure a narrow and positive power range, thus minimising mismatch losses in the system.

The high transmission structured glass has a light texture on the front and a deeper texture inside, which improves the adhesion of the EVA encapsulant. This combination of textures also gives improvement to the performance of the solar module compared to smooth glass.

**Dependable construction and long life**

Featuring the highest standards of construction and materials, Naps Pallas solar modules are able to withstand the harshest environments and continue to perform efficiently. Properly installed, these modules have a design life well beyond the power warranty. Limited power warranties are given for both 10 and 25 years. The modules are tested to meet or exceed all relevant international standards and the highest requirements for quality and performance.

www.napssystems.com
Specifications

<table>
<thead>
<tr>
<th>Performance at STC</th>
<th>210 TP3 MBW</th>
<th>215 TP3 MBW</th>
<th>220 TP3 MBW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum power (W/Pmax)</td>
<td>210</td>
<td>215</td>
<td>220</td>
</tr>
<tr>
<td>Maximum power tolerance (W)</td>
<td>+5/-0</td>
<td>+5/-0</td>
<td>+5/-0</td>
</tr>
<tr>
<td>Current (typical at max power) (A/Ip)</td>
<td>7.96</td>
<td>8.05</td>
<td>8.14</td>
</tr>
<tr>
<td>Voltage (typical at max power) (V/Vp)</td>
<td>26.4</td>
<td>26.7</td>
<td>27.0</td>
</tr>
<tr>
<td>Short circuit current (typical) (A/Isc)</td>
<td>8.55</td>
<td>8.58</td>
<td>8.62</td>
</tr>
<tr>
<td>Open circuit voltage (typical) (V/Voc)</td>
<td>32.4</td>
<td>32.9</td>
<td>33.4</td>
</tr>
<tr>
<td>Module efficiency (minimum) (%)</td>
<td>14.5</td>
<td>14.9</td>
<td>15.2</td>
</tr>
<tr>
<td>Module efficiency (maximum) (%)</td>
<td>14.9</td>
<td>15.2</td>
<td>15.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Performance at NOCT and 800 W/m²</th>
<th>210 TP3 MBW</th>
<th>215 TP3 MBW</th>
<th>220 TP3 MBW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum power (W/Pmax)</td>
<td>152.3</td>
<td>156.3</td>
<td>160.4</td>
</tr>
<tr>
<td>Current (typical at max power) (A/Ip)</td>
<td>6.35</td>
<td>6.43</td>
<td>6.51</td>
</tr>
<tr>
<td>Voltage (typical at max power) (V/Vp)</td>
<td>24.0</td>
<td>24.3</td>
<td>24.6</td>
</tr>
<tr>
<td>Short circuit current (typical) (A/Isc)</td>
<td>6.94</td>
<td>6.97</td>
<td>7.00</td>
</tr>
<tr>
<td>Open circuit voltage (typical) (V/Voc)</td>
<td>30.0</td>
<td>30.5</td>
<td>30.9</td>
</tr>
</tbody>
</table>

Module Dimensions

Voltage / Current Dependence on Temperature

Voltage / Current Dependence on Irradiance

Mechanical Details

- Overall length (mm) | 1465
- Overall width (mm) | 986
- Area (m²) | 1.444
- Thickness at edge (mm) | 3
- Weight (kg) | 19.3

Construction

- Cell type: polycrystalline 3BB
- Cells: 54
- Cell dimensions (mm): 156 x 166
- Cell electrical circuit (series x parallel): 54 x 1
- Cell layout, (horizontal x vertical): 6 x 9
- Glass thickness (mm): 4.0
- Junction box type: Hercules HBH
- Bypass diodes factory fitted: 3
- Cables (4.0 mm²): 2 x 1 m
- Connector type: H4C
- Other connector options available to special order

Protection Class

IEC61730 Application Class A, equivalent to Safety Class II

Maximum System Voltage

- Voltage (V): 1000

Overcurrent Protection

- Series fuse protection rating (A): 15
- Reverse current maximum (A): 15

Mechanical Load

- Tested to (Nm² = Pa): 5400
- According to IEC 61215-2: extended test for heavy snow load

Temperature Coefficients at STC

- Open circuit voltage (V/K): -0.112
- Short circuit current (A/K): 0.0477
- Maximum power (%/K): -0.49

Efficiency Reduction from STC

- Reduction (approximately) (%): 4
- Cell temperature (°C): 25
- Irradiation change (W/m²) from 1000 to 200: 25
- Air Mass: 1.5

STC = Standard Test Conditions

- Cell temperature (°C): 25
- Irradiation (W/m²): 1000
- Air Mass: 1.5

NOCT = Normal Operating Cell Temperature

- Cell temperature (°C): 46
- Irradiation (W/m²): 800
- Ambient temperature (°C): 20
- Wind speed (m/s): ≤5

Free air access to module rear

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