Glass-glass module
Solid quality with high performance

Thanks to their modern design SOLARWATT glass-glass modules deliver the highest long-term yields. They are robust and resilient, yet just as light as their glass-foil predecessors.

The high-performance PERC solar cells are embedded almost indestructibly in the glass-glass composite and thus optimally protected against all weather effects and mechanical stress. SOLARWATT can therefore offer a 30-year warranty on performance and product quality.

Product Quality

• long-lasting and high-yield
• salt mist resistant
• 100 % plus-sorting
• 100 % PID protected

Service

30 Year Product Warranty
as per „Warranty conditions for SOLARWATT solar modules“

30 Year Performance Warranty
on 87 % of nominal power as per „Warranty conditions for SOLARWATT solar modules“

Country of origin
Quality made in Germany
**General data**

- **Module technology**: Glass-glass laminate; aluminum frame
- **Covering material**: Tempered solar glass with anti-reflective finish, 2 mm EVA-solar cell-EVA, white
- **Back cover material**: Tempered glass, 2 mm
- **Solar cells**: 60 polycrystalline high power solar cells
- **Cell dimensions**: 157 x 157 mm
- **L x W x H / Weight**: $1.680 \pm 2 \times 990 \pm 2 \times 40 \pm 0.3 \text{ mm} / \text{ approx. 22.8 kg}$
- **Connection technology**: Cables 2 x 1.0 m/4 mm²
- **Bypass diodes**: 3
- **Max. system voltage**: 1.000 V
- **IP rating**: IP67
- **Protection class**: II (acc. to IEC 61140)
- **Fire class**: C (acc. to IEC 61730), E (acc. to EN 13501)
- **Certified mechanical ratings as per IEC 61215**: Suction load up to 2400 Pa (test load 3600 Pa)
- **Pressure load up to 5400 Pa (test load 8100 Pa)**
- **Recommended stress load as per Installation Instructions**: Please refer to the specifications in the Installation Instructions and Warranty Conditions.
- **Qualifications**: IEC 61215 | IEC 61730 | IEC 61701 | IEC 62804

**Technical data sheet**

**Vision 60P**

**Dimensions**

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**Electrical data (STC)**

- **STC (Standard Test Conditions): Irradiation intensity 1,000 W/m², spectral distribution AM 1.5 | Temperature 25±2 °C, in accordance to EN 60904-3**

<table>
<thead>
<tr>
<th>Nominal power $P_{\text{nom}}$</th>
<th>270 Wp</th>
<th>275 Wp</th>
<th>280 Wp</th>
<th>285 Wp</th>
<th>290 Wp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage $V_{\text{mp}}$</td>
<td>31,1 V</td>
<td>31,2 V</td>
<td>31,3 V</td>
<td>31,4 V</td>
<td>31,5 V</td>
</tr>
<tr>
<td>Nominal current $I_{\text{mp}}$</td>
<td>8,76 A</td>
<td>8,89 A</td>
<td>9,02 A</td>
<td>9,15 A</td>
<td>9,28 A</td>
</tr>
<tr>
<td>Open circuit voltage $V_{\text{oc}}$</td>
<td>38,5 V</td>
<td>38,7 V</td>
<td>38,9 V</td>
<td>39,1 V</td>
<td>39,3 V</td>
</tr>
<tr>
<td>Short circuit current $I_{\text{sc}}$</td>
<td>9,44 A</td>
<td>9,56 A</td>
<td>9,68 A</td>
<td>9,80 A</td>
<td>9,92 A</td>
</tr>
<tr>
<td>Module efficiency</td>
<td>16,4 %</td>
<td>16,7 %</td>
<td>17,0 %</td>
<td>17,3 %</td>
<td>17,6 %</td>
</tr>
</tbody>
</table>

**Electrical data (NMOT and weak light)**

- **NMOT (Nominal Module Operation Temperature): Irradiation intensity 800 W/m², spectral distribution AM 1.5, Temperature 20°C**

Weak light conditions: Irradiation intensity 200 W/m², Temperature 25°C, Wind speed 1m/s, load operation

<table>
<thead>
<tr>
<th>Nominal power $P_{\text{nom}}$</th>
<th>199 W</th>
<th>203 W</th>
<th>207 W</th>
<th>210 W</th>
<th>214 W</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal power $P_{\text{nom}}$</td>
<td>53,8 W</td>
<td>55,1 W</td>
<td>56,0 W</td>
<td>57,1 W</td>
<td>57,7 W</td>
</tr>
</tbody>
</table>

Measurement tolerances: $P_{\text{max}} \pm 5 \%$, $V_{\text{oc}} \pm 3 \%$, $I_{\text{sc}} \pm 5 \%$, $I_{\text{mp}} \pm 5 \%$

**Characteristics lines (Performance Class 280 Wp)**

**Voltage characteristic line at different temperatures and irradiances**

**Thermal Features**

<table>
<thead>
<tr>
<th>Operating temperature range</th>
<th>-40 ... +85 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ambient temperature range</td>
<td>-40 ... +85 °C</td>
</tr>
<tr>
<td>Temperature coefficient $P_{\text{max}}$</td>
<td>-0,41%/K</td>
</tr>
<tr>
<td>Temperature coefficient $V_{\text{oc}}$</td>
<td>-0,31%/K</td>
</tr>
<tr>
<td>Temperature coefficient $I_{\text{sc}}$</td>
<td>0,05%/K</td>
</tr>
<tr>
<td>NMOT</td>
<td>44°C</td>
</tr>
</tbody>
</table>