V-Series Modules
Polycrystalline Solar Modules
Peak Power: 310-325Wp

High Quality
• Powered by TSEC premium grade solar cells.
• PID free by adopting TSEC PID free solar cells plus PID resistant materials.

High Reliability
• Snow Pressure (Mechanical loading) up to 10,000 pa (Optional)
• Snow Pressure (Mechanical loading) up to 5,400 pa
• Wind pressure up to 2,400 pa
• PID resistance up to 1000hrs by TÜV Rheinland.
• Salt mist corrosion testing up to 56 days by ITRI, follow severity 6 in IEC 60068-2-52 standard.

Strict Quality Control
• Positive power tolerance from 0 to 5W.
• Current sorting for hot spot protection.
• 3-stage EL tests at pre-lamination, before framing and before delivery.

Module Characteristics

<table>
<thead>
<tr>
<th>Dimension</th>
<th>1,965 x 993 x 39 mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>21.5 Kg</td>
</tr>
</tbody>
</table>

Certifications
• CE / MCS / ETL UL-1703
• ISO 9001:2008 Quality management system
• ISO 14001:2004 Standards for environmental management system
• ISO 50001:2011 Energy management system
• OHSAS 18001:2007 International standards for occupational health and safety

Warranty
• 10-year materials and workmanship warranty.
• 25-year linear power warranty.
## Performance Under Standard Test Conditions

<table>
<thead>
<tr>
<th>Model Name</th>
<th>TS72-6P3-310</th>
<th>TS72-6P3-315</th>
<th>TS72-6P3-320</th>
<th>TS72-6P3-325</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. power at STC $P_{max}$ W</td>
<td>310</td>
<td>315</td>
<td>320</td>
<td>325</td>
</tr>
<tr>
<td>Max. power voltage $V_{mp}$ V</td>
<td>37.36</td>
<td>37.61</td>
<td>37.39</td>
<td>37.59</td>
</tr>
<tr>
<td>Max. power current $I_{mp}$ A</td>
<td>8.32</td>
<td>8.39</td>
<td>8.56</td>
<td>8.65</td>
</tr>
<tr>
<td>Open circuit voltage $V_{oc}$ V</td>
<td>45.52</td>
<td>45.84</td>
<td>46.41</td>
<td>46.63</td>
</tr>
<tr>
<td>Short circuit current $I_{sc}$ A</td>
<td>8.74</td>
<td>8.79</td>
<td>9.15</td>
<td>9.22</td>
</tr>
<tr>
<td>Power Tolerance $\Delta P_{max}$ W</td>
<td>-0/+5 (Positive power classification)</td>
<td>-0/+5 (Positive power classification)</td>
<td>-0/+5 (Positive power classification)</td>
<td>-0/+5 (Positive power classification)</td>
</tr>
<tr>
<td>FF (%)</td>
<td>78.13</td>
<td>78.31</td>
<td>75.43</td>
<td>75.64</td>
</tr>
<tr>
<td>Module Conversion Eff. %</td>
<td>15.89</td>
<td>16.14</td>
<td>16.40</td>
<td>16.66</td>
</tr>
<tr>
<td>Module Effective Conversion Eff. %</td>
<td>17.69</td>
<td>17.98</td>
<td>18.26</td>
<td>18.55</td>
</tr>
</tbody>
</table>

* Standard Test Condition (1,000 W/m², 25°C, AM 1.5)

* Module Conversion Eff. (%) = \( \frac{\text{Max power at STC (w)}}{\text{Solar Module Area (m²)} \times 1000 \text{ (w/m²)}} \) x 100%

* Module Effective Conversion Eff. (%) = \( \frac{\text{Max power at STC (w)}}{\text{Solar Cell Total Area (m²)} \times 1000 \text{ (w/m²)}} \) x 100%

## Thermal Characteristics

| Normal Operating cell temperature NOCT °C | 45.1 |
| TC $I_{sc}$ αsc %/°C | +0.073 |
| TC $V_{oc}$ $BV_{oc}$ %/°C | -0.310 |
| TC $P_{max}$ γ%/°C | -0.431 |

## Component Material

- **Cell type**
  Polycrystalline / 156x156mm

- **Cell per module**
  72 pcs

- **Front**
  Low-iron glass / Tempered

- **Encapsulant Film**
  Ethylene Vinyl Acetate(EVA)

- **Rear**
  Backsheet

- **Frame**
  6063TS Anodized aluminum (silver/black)

- **Junction Box**
  IP65

- **Connector**
  MC4 Compatible

- **Cable**
  1000mm / 12 AWG / 4mm²

## System Integration Parameters

- **Max. system voltage**
  1000V

- **Fire rating (UL790)**
  Class C

- **Application class (Safety class II)**
  Class A

- **series fuse rating**
  15 A

- **Number of bypass diodes**
  3

- **Max. mechanical load**
  5,400Pa (By TÜV Rheinland)

- **Temperature range**
  -40 to 85°C

## IV Curve

![IV Curve](chart.png)

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Overseas Bases

* The information in this document is subject to change without notice.