Power range: from 230 to 240 Wp
Positive tolerance: from 0 to +4.99 Wp
Transparency: 19%
Frameless: without frame
Fire resistance: class of reaction to fire 1 (UNI 9177)
Warranty: 12 year against manufacturing defects
Cell: 5BB Polycrystalline, standard color

Measures VE154PVTTFL Transparent Frameless
- Length 1640 mm
- Width 985 mm
- Height 4 mm (on position of junction box 31 mm)
- Weight 17.5 kg
- Frameless -
- Glass thickness 3.2 mm

Specifications
- Use of tempered glass anti-glare with low iron content and high quality for optimum light collection.
- NOCT = 42.7°C
- Temperature range from -40°C to 85°C
- Mechanical load on surface max 550 kg/m²
- Hail impact resistance ø 25mm a 86 km/h

Measures VE254PVTTFL Transparent Frameless
- Length 1640 mm
- Width 985 mm
- Height 5 mm (on position of junction box 32 mm)
- Weight 19.5 kg
- Frameless -
- Glass thickness 4.0 mm

System certifications
- Corporate Quality Management EN ISO 9001:2008
- Environmental Management EN ISO 14001:2004
- Management of Health and Safety at the Workplace BS/DHSAAS 18001:2007
- Certificates issued by TUV Rheinland ID:9105084080

Product certifications
- IEC 61215:2005
- EN 61730-1/-2:2007
- Class of reaction to fire I (UNI 9177)
- Anti-corrosion saline IEC 61701
- Anti-corrosion ammonia IEC 62716
- PID Free - Classe A
- Safety class II
- Factory Inspection
- Production “made in Italy”
- EC Directives: EMC 2004/108/EC; 2006/95/EC low Voltage

Guarantees
- 12 year warranty against manufacturing defects*
- 25 year linear warranty to 82.5% of the maximum declared power*

*If used and installed according to technical and operational instructions. The Company reserves the right to make changes to product specifications. This data sheet corresponds to the requirements of Standard EN50530. Rel.2 05/2019
**Behavior in standard test conditions STC***

<table>
<thead>
<tr>
<th>Power class (maximum value)</th>
<th>$P_{\text{max}}$</th>
<th>230 Wp</th>
<th>253 Wp</th>
<th>260 Wp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Efficiency</td>
<td>$\eta$</td>
<td>14,24%</td>
<td>14,55%</td>
<td>14,86%</td>
</tr>
<tr>
<td>Open-circuit voltage</td>
<td>$V_{\text{oc}}$</td>
<td>33,98 V</td>
<td>34,38 V</td>
<td>34,81 V</td>
</tr>
<tr>
<td>Short-circuit current</td>
<td>$I_{\text{sc}}$</td>
<td>8,86 A</td>
<td>8,93 A</td>
<td>8,99 A</td>
</tr>
<tr>
<td>Maximum power voltage</td>
<td>$V_{\text{mp}}$</td>
<td>27,79 V</td>
<td>28,19 V</td>
<td>28,61 V</td>
</tr>
<tr>
<td>Current at maximum power</td>
<td>$I_{\text{mp}}$</td>
<td>8,33 A</td>
<td>8,41 A</td>
<td>8,47 A</td>
</tr>
</tbody>
</table>

*Note - Under standard conditions: Irradiation 1000 W/m² - Module temperature = 25°C - Air mass AM 1,5
Measurement tolerance solar simulator class A [-/+ 2%] in accordance with IEC 60904-9

**NOCT conditions behavior**

<table>
<thead>
<tr>
<th>Power class (maximum value)</th>
<th>$P_{\text{max}}$</th>
<th>177,83 Wp</th>
<th>182,74 Wp</th>
<th>187,72 Wp</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open-circuit voltage</td>
<td>$V_{\text{oc}}$</td>
<td>31,95 V</td>
<td>32,36 V</td>
<td>32,76 V</td>
</tr>
<tr>
<td>Short-circuit current</td>
<td>$I_{\text{sc}}$</td>
<td>7,27 A</td>
<td>7,34 A</td>
<td>7,42 A</td>
</tr>
<tr>
<td>Maximum power voltage</td>
<td>$V_{\text{mp}}$</td>
<td>26,19 V</td>
<td>26,60 V</td>
<td>27,01 V</td>
</tr>
<tr>
<td>Current at maximum power</td>
<td>$I_{\text{mp}}$</td>
<td>6,79 A</td>
<td>6,87 A</td>
<td>6,95 A</td>
</tr>
</tbody>
</table>

**Note - Under NOCT conditions: Irradiation 800 W/m² - Module temperature = 42,7°C - Air mass AM 1,5

**Materials used**

- Cells per module: 54
- Cell type: 5BB Polycrystalline
- Cell size: 156,75 mm x 156,75 mm
- Front side: Anti-glare tempered glass (EN 12150)
- Back side: Transparent backsheet

**Thermal characteristics**

- NOCT: 42,7 +/- 2°C
- TC $I_{\text{sc}}$: 3,425 mA/°C
- TC $V_{\text{oc}}$: -0,138 V/°C
- TC $P_{\text{mp}}$: -0,43 %/°C

**Parameters for optimal integration into the system**

- Maximum system voltage class II: 1000 V
- Load capacity of reverse current: 15 A
- High snow loads (standard IEC 61215): max 5,4 kN/m²
- Number of bypass diodes: 3

**More Info**

- Transparency: 19%
- Sorting tolerance $P_{\text{max}}$: 0/+4,99 W
- Type of protection (IP): IP65
- Connector: MC4
- Cable: Solar cable 4mm² - Length 1m