Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY
Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.5%.

INNOVATIVE ALL-WEATHER TECHNOLOGY
Optimal yields, whatever the weather with excellent low-light and temperature behavior.

ENDURING HIGH PERFORMANCE
Long-term yield security with Anti LID and Anti PID Technology\(^1\), Hot-Spot Protect and Traceable Quality Tra.Q\(^\text{TM}\).

EXTREME WEATHER RATING
High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).

A RELIABLE INVESTMENT
Inclusive 12-year product warranty and 25-year linear performance warranty\(^2\).

STATE OF THE ART MODULE TECHNOLOGY
Q.ANTUM DUO combines cutting edge cell separation and innovative wiring with Q.ANTUM Technology.

\(^1\) APT test conditions according to IEC/TS 62804-1:2015, method B (-1500 V, 168 h)
\(^2\) See data sheet on rear for further information

THE IDEAL SOLUTION FOR:
Rooftop arrays on residential buildings

Engineered in Germany
### MECHANICAL SPECIFICATION

**Format**  
68.5 x 40.6 x 1.26 in (including frame)  
(1740 x 1030 x 32 mm)

**Weight**  
43.9 lbs (19.9 kg)

**Front Cover**  
0.13 in (3.2 mm) thermally pre-stressed glass  
with anti-reflection technology

**Back Cover**  
Composite film

**Frame**  
Black anodized aluminum

**Cell**  
6 x 20 monocrystalline Q.ANTUM solar half cells

**Junction Box**  
2.09 - 3.98 x 1.26 - 2.36 x 0.59 - 0.71 in (53 - 101 x 32 - 60 x 15 - 18 mm), Protection class IP67, with bypass diodes

**Cable**  
4 mm² Solar cable, (+) ≥ 45.3 in (1150 mm), (−) ≥ 45.3 in (1150 mm)

**Connector**  
Stäubli MC4, Hanwha Q CELLS HQC4, IP68

### ELECTRICAL CHARACTERISTICS

#### POWER CLASS

<table>
<thead>
<tr>
<th>Minimum Performance at Standard Test Conditions, STC (Power Tolerance +5W/-0W)</th>
<th>POWER AT MPP**</th>
<th>SHORT CIRCUIT CURRENT*</th>
<th>OPEN CIRCUIT VOLTAGE</th>
<th>CURRENT AT MPP</th>
<th>VOLTAGE AT MPP</th>
<th>EFFICIENCY*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Minimum</strong></td>
<td>P&lt;sub&gt;PP&lt;/sub&gt; [W]</td>
<td>330</td>
<td>335</td>
<td>340</td>
<td>345</td>
<td></td>
</tr>
<tr>
<td><strong>Short Circuit Current</strong></td>
<td>I&lt;sub&gt;SC&lt;/sub&gt; [A]</td>
<td>10.41</td>
<td>10.47</td>
<td>10.52</td>
<td>10.58</td>
<td></td>
</tr>
<tr>
<td><strong>Open Circuit Voltage</strong></td>
<td>V&lt;sub&gt;OC&lt;/sub&gt; [V]</td>
<td>40.15</td>
<td>40.41</td>
<td>40.66</td>
<td>40.92</td>
<td></td>
</tr>
<tr>
<td><strong>Current at MPP</strong></td>
<td>I&lt;sub&gt;MP&lt;/sub&gt; [A]</td>
<td>9.91</td>
<td>9.97</td>
<td>10.02</td>
<td>10.07</td>
<td></td>
</tr>
<tr>
<td><strong>Voltage at MPP</strong></td>
<td>V&lt;sub&gt;PP&lt;/sub&gt; [V]</td>
<td>33.29</td>
<td>33.62</td>
<td>33.94</td>
<td>34.25</td>
<td></td>
</tr>
<tr>
<td><strong>Efficiency</strong></td>
<td>η [%]</td>
<td>≥ 18.4</td>
<td>≥ 18.7</td>
<td>≥ 19.0</td>
<td>≥ 19.3</td>
<td></td>
</tr>
</tbody>
</table>

#### Minimum Performance at Normal Operating Conditions, NMOT**

| Power at MPP | P<sub>PP</sub> [W] | 2470 | 250.7 | 254.6 | 258.2 |
| Short Circuit Current | I<sub>SC</sub> [A] | 8.39 | 8.43 | 8.48 | 8.52 |
| Open Circuit Voltage | V<sub>OC</sub> [V] | 37.86 | 38.10 | 38.34 | 38.59 |
| Current at MPP | I<sub>MP</sub> [A] | 7.80 | 7.84 | 7.89 | 7.93 |
| Voltage at MPP | V<sub>MP</sub> [V] | 31.66 | 31.97 | 32.27 | 32.57 |

#### Minimum Performance at Low Irradiance

<table>
<thead>
<tr>
<th>Typical Module Performance Under Low Irradiance Conditions</th>
<th>RELATIVE EFFICIENCY [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRRADIANCE [W/m²]</td>
<td>200</td>
</tr>
<tr>
<td>RELATIVE EFFICIENCY [%]</td>
<td>90</td>
</tr>
</tbody>
</table>

### TEMPERATURE COEFFICIENTS

| Temperature Coefficient of I<sub>SC</sub> | α [%/K] | +0.04 |
| Temperature Coefficient of V<sub>OC</sub> | β [%/K] | −0.27 |
| Temperature Coefficient of P<sub>PP</sub> | γ [%/K] | −0.36 |

#### Nominal Module Operating Temperature (NMOT)**

NMOT: 109 ± 5.4 (43 ± 3 °C)

### Q CELLS PERFORMANCE WARRANTY

At least 96% of nominal power during first year. Thereafter max. 0.54% degradation per year. At least 93.1% of nominal power up to 10 years. At least 85% of nominal power up to 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales organization of your respective country.

### PROPERTIES FOR SYSTEM DESIGN

| Maximum System Voltage V<sub>VS</sub> [V] | 1000 (IEC)/1020 (UL) |
| Maximum Series Fuse Rating [A DC] | 20 |
| Max. Design Load, Push / Pull | 75 (3600 Pa)/55 (2667 Pa) |
| Max. Test Load, Push / Pull | 113 (5400 Pa)/84 (4000 Pa) |

#### Fire Rating based on ANSI / UL 61730 TYPE 2

Permitted Module Temperature on Continuous Duty: −40 °F up to +185 °F (−40 °C up to +85 °C)

### QUALIFICATIONS AND CERTIFICATES


### PACKAGING INFORMATION

#### Horizontal Packaging

- 70.1 in (1800 mm)
- 42.6 in (1080 mm)
- 47.6 in (1208 mm)
- 1485 lbs (674 kg)

#### Vertical Packaging

- 70.1 in (1800 mm)
- 42.6 in (1080 mm)
- 1805 lbs (833 kg)

20 pallets / 26 pallets / 32 modules

### Hanwha Q CELLS America Inc.

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Note: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use of this product. Q CELLS supplies solar modules in two different stacking methods, depending on the location of manufacture (modules are packed horizontally or vertically). You can find more detailed information in the document "Packaging and Transport Information", available from Q CELLS.