BREAKING THE 20% EFFICIENCY BARRIER
Q.AN'TUM DUO Z Technology with zero gap cell layout boosts module efficiency up to 21.4%.

THE MOST THOROUGH TESTING PROGRAMME IN THE INDUSTRY
Q CELLS is the first solar module manufacturer to pass the most comprehensive quality programme in the industry: The new “Quality Controlled PV” of the independent certification institute TÜV Rheinland.

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 Technology, Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.

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

A RELIABLE INVESTMENT
Inclusive 25-year product warranty and 25-year linear performance warranty².

¹ APT test conditions according to IEC/TS 62804-1:2015, method A (-1500 V, 96 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**: 32.0 in × 41.1 in × 1.26 in (including frame) (1879 mm × 1045 mm × 32 mm)
- **Weight**: 48.5 lbs (22.0 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 × 22 monocrystalline Q.ANTUM solar half cells
- **Junction Box**: 2.09-3.98 in × 1.26-2.36 in × 0.59-0.71 in
- **Cable**: 4 mm² Solar cable; (+) ≥ 49.2 in (1250 mm), (−) ≥ 49.2 in (1250 mm)
- **Connector**: Stäubli MC4; IP68

**ELECTRICAL CHARACTERISTICS**

**POWER CLASS**

<table>
<thead>
<tr>
<th>Power at MPP1</th>
<th>395</th>
<th>400</th>
<th>405</th>
<th>410</th>
<th>415</th>
</tr>
</thead>
<tbody>
<tr>
<td>P_{MP} [W]</td>
<td>395</td>
<td>400</td>
<td>405</td>
<td>410</td>
<td>415</td>
</tr>
<tr>
<td>Short Circuit Current1</td>
<td>I_{SC} [A]</td>
<td>11.13</td>
<td>11.16</td>
<td>11.19</td>
<td>11.22</td>
</tr>
<tr>
<td>Open Circuit Voltage1</td>
<td>V_{OC} [V]</td>
<td>45.03</td>
<td>45.06</td>
<td>45.09</td>
<td>45.13</td>
</tr>
<tr>
<td>Current at MPP</td>
<td>I_{MPP} [A]</td>
<td>10.58</td>
<td>10.64</td>
<td>10.70</td>
<td>10.76</td>
</tr>
<tr>
<td>Voltage at MPP</td>
<td>V_{MPP} [V]</td>
<td>37.32</td>
<td>37.59</td>
<td>37.85</td>
<td>38.11</td>
</tr>
<tr>
<td>Efficiency1</td>
<td>η [%]</td>
<td>≥ 20.1</td>
<td>≥ 20.4</td>
<td>≥ 20.6</td>
<td>≥ 20.9</td>
</tr>
</tbody>
</table>

**MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC** (POWER TOLERANCE +5 W / −0 W)

**MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT**

**QUALIFICATIONS AND CERTIFICATES**

- **U.S. Patent No. 9,893,215 (solar cells), IEC 61215:2016, IEC 61730:2016, Quality Controlled PV - TÜV Rheinland, UL 61730, CE-compliant, QCPV Certification ongoing.**

**Q CELLS PERFORMANCE WARRANTY**

At least 96% of nominal power during first year. Thereafter max. 0.5% degradation per year. At least 93% of nominal power up to 10 years. At least 86% 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.

**TEMPERATURE COEFFICIENTS**

- **Temperature Coefficient of I_{SC}** α [%/K] +0.04
- **Temperature Coefficient of V_{OC}** β [%/K] −0.27
- **Temperature Coefficient of P_{MP}** γ [%/K] −0.34

**PERFORMANCE AT LOW IRRADIANCE**

Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²)

**PROPERTIES FOR SYSTEM DESIGN**

- **Maximum System Voltage V_{MVS} [V]** 1000 (IEC)/1000 (UL)
- **PV module classification**: Class II
- **Maximum Series Fuse Rating [A DC]** 20
- **Fire Rating based on ANSI / UL 61730**: TYPE 2
- **Max. Design Load, Push / Pull1**: 75 (3600 Pa)/55 (2660 Pa)
- **Max. Test Load, Push / Pull1**: 113 (5400 Pa)/84 (4000 Pa)
- **Permitted Module Temperature on Continuous Duty** −40°F up to +185°F

**Q.CELLS PERFORMANCE WARRANTY**

- **Minimum Module Operating Temperature**: 75 °F (24 °C)
- **Maximum Series Fuse Rating**: 20
- **Fire Rating based on ANSI / UL 61730**: TYPE 2
- **Permitted Module Temperature on Continuous Duty**: −40°F up to +185°F

**QUALIFICATIONS AND CERTIFICATES**


**PACKAGING INFORMATION**

- **Horizontal packaging**: 1940 mm, 1100 mm, 1220 mm
- **Vertical packaging**: 1666 lbs, 24 pallets, 24 pallets, 32 modules

**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.

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