

Q.CELLS
YIELD SECURITY

- ✓ ANTI PID TECHNOLOGY (APT)
- ✓ HOT-SPOT PROTECT (HSP)
- ✓ TRACEABLE QUALITY (TRA.Q™)

VDE
Quality Tested

high reliability
optimized durability
low degradation
continuous line monitoring

ID. 40032587

EUPD RESEARCH
TOP BRAND PV
MODULES
GERMANY
2012

POLYCRYSTALLINE SOLAR MODULE

Q.PRO - G2 230-250

Reliability and safety

The **Q.PRO** solar module with power classes up to 250 W is the strongest 60 cell module of its type on the market globally. But there is even more to our polycrystalline modules. Only **Q.CELLS** offers German engineering quality with our unique triple Yield Security for higher energy output – verified by independent testing¹.

YOUR EXCLUSIVE TRIPLE YIELD SECURITY

- **Anti PID Technology (APT)** reliably prevents power loss resulting from unwanted leakage currents (potential-induced degradation)².
- **Hot-Spot Protect (HSP)** prevents yield losses and reliably protects against module fire.
- **Traceable Quality (Tra.Q™)** is the 'Finger Print' of a solar cell. Tra.Q™ ensures continuous quality control throughout the entire production process from cells to modules while making Q.CELLS solar modules forgery proof.

ONE MORE ADVANTAGE FOR YOU

- **Improved energy yield:** The actual output of all Q.CELLS solar modules is up to 5 Wp higher than the nominal power thanks to positive sorting.
- **Controlled quality:** Q.PRO - G2 modules continuously and successfully pass the most stringent testing program in the PV sector and carry the quality certificate 'VDE Quality Tested' awarded by the Association of German Engineers.
- **Guaranteed performance:** Q.CELLS offers the best warranties on the market. A 10-year product warranty plus a 25-year linear performance warranty³.



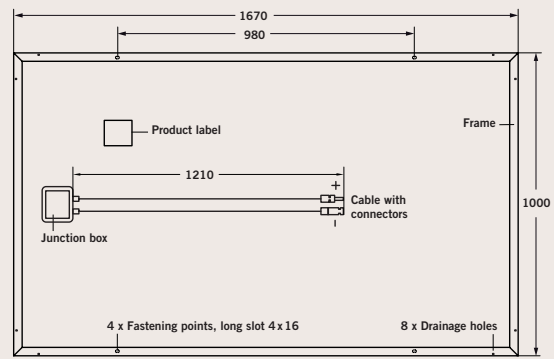
¹ For more information please visit the Desert Knowledge Australia Solar Centre (www.dksolarcentre.com.au)

² APT test conditions: Cells at -1000 V against grounded, with conductive metal foil covered module surface, 25 °C, 168 h (TÜV test conditions)

³ See data sheet on rear for further information.

MECHANICAL SPECIFICATION

Format	1670 mm x 1000 mm x 50 mm (including frame)
Weight	19.8 kg
Front Cover	3.2 mm thermally pre-stressed solar glass
Back Cover	Composite film
Frame	Anodised aluminum
Cell	6 x 10 polycrystalline solar cells
Junction box	134 mm x 169 mm x 26 mm Protection class IP 68, with bypass diodes
Cable	4 mm ² Solar cable; (+) 1210 mm, (-) 1210 mm
Connector	Yamaichi Y-SOL4, IP 68



ELECTRICAL CHARACTERISTICS

PERFORMANCE AT STANDARD TEST CONDITIONS (STC: 1000 W/m², 25 °C, AM 1.5 G SPECTRUM)¹

NOMINAL POWER (+5 / -0 W)		[W]	230	235	240	245	250
Average Power	P_{MPP}	[W]	232.5	237.5	242.5	247.5	252.5
Short Circuit Current	I_{SC}	[A]	8.59	8.67	8.76	8.85	8.94
Open Circuit Voltage	V_{OC}	[V]	36.95	37.16	37.38	37.59	37.81
Current at P_{MPP}	I_{MPP}	[A]	7.95	8.08	8.20	8.32	8.45
Voltage at P_{MPP}	V_{MPP}	[V]	29.24	29.41	29.57	29.73	29.89
Efficiency (Nominal Power)	η	[%]	≥ 13.8	≥ 14.1	≥ 14.4	≥ 14.7	≥ 15.0

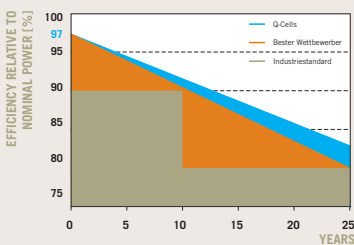
PERFORMANCE AT NORMAL OPERATING CELL TEMPERATURE (NOCT: 800 W/m², 47 ± 3 °C, AM 1.5 G SPECTRUM)²

NOMINAL POWER (+5 / -0 W)		[W]	230	235	240	245	250
Average Power	P_{MPP}	[W]	167.2	170.9	174.5	178.2	181.8
Short Circuit Current	I_{SC}	[A]	6.71	6.77	6.83	6.89	6.96
Open Circuit Voltage	V_{OC}	[V]	33.52	33.77	34.03	34.28	34.53
Current at P_{MPP}	I_{MPP}	[A]	6.20	6.26	6.33	6.39	6.45
Voltage at P_{MPP}	V_{MPP}	[V]	26.98	27.29	27.59	27.88	28.17

¹ Measurement uncertainty STC: within 3% (P_{MPP}); within 10% (I_{SC}, V_{OC}, I_{MPP}, V_{MPP})

² Measurement uncertainty NOCT: within 5% (P_{MPP}); within 10% (I_{SC}, V_{OC}, I_{MPP}, V_{MPP})

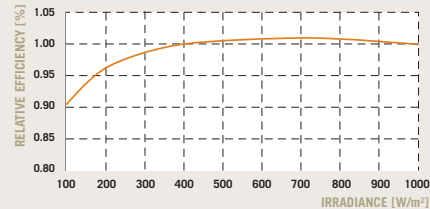
Q.CELLS PERFORMANCE WARRANTY



At least 97% of nominal power during first year. Thereafter max. 0.6% degradation per year.
At least 92% of nominal power after 10 years.
At least 83% of nominal power after 25 years.

All data within measurement tolerances.
Full product and performance warranties in accordance with the Q.CELLS warranties applicable in your country.

PERFORMANCE AT LOW IRRADIANCE



The typical change in module efficiency at an irradiance of 200 W/m² in relation to 1000 W/m² (both at 25 °C and AM 1.5 G spectrum) is -4% (relative).

TEMPERATURE COEFFICIENTS (AT 1000 W/m², 25 °C, AM 1.5 G SPECTRUM)

Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	-0.32
Temperature Coefficient of P_{MPP}	γ	[%/K]	-0.45				

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{sys}	[V]	1000	Safety Class	II
Maximum Reverse Current I_r	[A]	20	Fire Rating	C
Wind/Snow Load	[Pa]	5400	Permitted module temperature on continuous duty	-40 °C up to +85 °C

QUALIFICATIONS AND CERTIFICATES

VDE Quality Tested, IEC 61215 (Ed.2); IEC 61730 (Ed.1), Application class A
This data sheet complies with DIN EN 50380.



PARTNER

NOTE: Installation instructions must be followed. See the installation and operating manual or contact the technical service for further information on approved installation and use of this product.

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