



## 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.

### YOUR EXCLUSIVE TRIPLE YIELD SECURITY

- **Anti PID Technology (APT)** reliably prevents power loss resulting from unwanted leakage currents (potential-induced degradation)<sup>1</sup>.
- **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 warranty<sup>2</sup>.

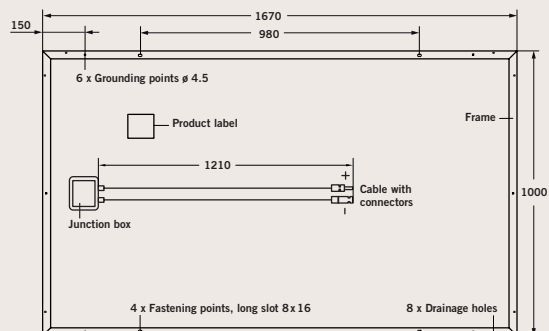


<sup>1</sup> APT test conditions: Cells at -1000 V against grounded, with conductive metal foil covered module surface, 25 °C, 168 h (TUV test conditions)

<sup>2</sup> See data sheet on rear for further information.

## MECHANICAL SPECIFICATION

<b>Format</b>	1670 mm x 1000 mm x 50 mm (including frame)
<b>Weight</b>	19.8 kg
<b>Front Cover</b>	3.2 mm thermally pre-stressed solar glass
<b>Back Cover</b>	Composite film
<b>Frame</b>	Anodised aluminum
<b>Cell</b>	6 x 10 polycrystalline solar cells
<b>Junction box</b>	116 mm x 153 mm x 20 mm Protection class IP 68, with bypass diodes
<b>Cable</b>	4 mm <sup>2</sup> Solar cable; (+) 1210 mm, (-) 1210 mm
<b>Connector</b>	Yamaichi Y-SOL4, IP 68



## ELECTRICAL CHARACTERISTICS

PERFORMANCE AT STANDARD TEST CONDITIONS (STC: 1000 W/m<sup>2</sup>, 25 °C, AM 1.5 G SPECTRUM)<sup>1</sup>

NOMINAL POWER (+5 W/-0 W)		[W]	230	235	240	245	250
<b>Average Power</b>	<b>P<sub>MPP</sub></b>	[W]	232.5	237.5	242.5	247.5	252.5
<b>Short Circuit Current</b>	<b>I<sub>SC</sub></b>	[A]	8.59	8.67	8.76	8.85	8.94
<b>Open Circuit Voltage</b>	<b>V<sub>OC</sub></b>	[V]	36.92	37.13	37.35	37.56	37.78
<b>Current at P<sub>MPP</sub></b>	<b>I<sub>MPP</sub></b>	[A]	7.95	8.08	8.20	8.32	8.45
<b>Voltage at P<sub>MPP</sub></b>	<b>V<sub>MPP</sub></b>	[V]	29.24	29.41	29.57	29.73	29.89
<b>Efficiency (Nominal Power)</b>	<b>η</b>	[%]	≥ 13.8	≥ 14.1	≥ 14.4	≥ 14.7	≥ 15.0

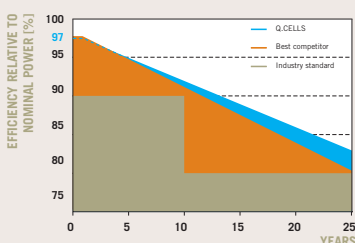
PERFORMANCE AT NORMAL OPERATING CELL TEMPERATURE (NOCT: 800 W/m<sup>2</sup>, 47 ± 3 °C, AM 1.5 G SPECTRUM)<sup>2</sup>

NOMINAL POWER (+5 W/-0 W)		[W]	230	235	240	245	250
<b>Average Power</b>	<b>P<sub>MPP</sub></b>	[W]	169.6	173.2	176.8	180.5	184.1
<b>Short Circuit Current</b>	<b>I<sub>SC</sub></b>	[A]	6.93	7.00	7.07	7.14	7.22
<b>Open Circuit Voltage</b>	<b>V<sub>OC</sub></b>	[V]	33.89	34.09	34.29	34.49	34.69
<b>Current at P<sub>MPP</sub></b>	<b>I<sub>MPP</sub></b>	[A]	6.36	6.46	6.56	6.65	6.75
<b>Voltage at P<sub>MPP</sub></b>	<b>V<sub>MPP</sub></b>	[V]	26.65	26.81	26.97	27.12	27.27

<sup>1</sup> Measurement tolerances STC: ± 3 % (P<sub>MPP</sub>); ± 10 % (I<sub>SC</sub>, V<sub>OC</sub>, I<sub>MPP</sub>, V<sub>MPP</sub>)

<sup>2</sup> Measurement tolerances NOCT: ± 5 % (P<sub>MPP</sub>); ± 10 % (I<sub>SC</sub>, V<sub>OC</sub>, I<sub>MPP</sub>, V<sub>MPP</sub>)

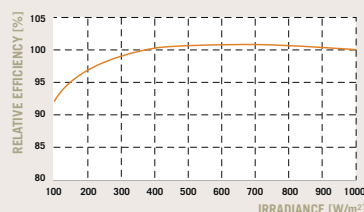
### Q.CELLS PERFORMANCE WARRANTY



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 warranties in accordance with the warranty terms of the Q.CELLS sales organization of your respective country.

### PERFORMANCE AT LOW IRRADIANCE



The typical change in module efficiency at an irradiance of 200 W/m<sup>2</sup> in relation to 1000 W/m<sup>2</sup> (both at 25 °C and AM 1.5 G spectrum) is -3 % (relative).

### TEMPERATURE COEFFICIENTS (AT 1000 W/m<sup>2</sup>, 25 °C, AM 1.5 G SPECTRUM)

<b>Temperature Coefficient of I<sub>SC</sub></b>	<b>α</b>	[%/K]	+0.04	<b>Temperature Coefficient of V<sub>OC</sub></b>	<b>β</b>	[%/K]	-0.33
<b>Temperature Coefficient of P<sub>MPP</sub></b>	<b>γ</b>	[%/K]	-0.43				

## PROPERTIES FOR SYSTEM DESIGN

<b>Maximum System Voltage V<sub>sys</sub></b>	[V]	1000	<b>Safety Class</b>	II
<b>Maximum Reverse Current I<sub>R</sub></b>	[A]	20	<b>Fire Rating</b>	C
<b>Wind/Snow Load (in accordance with IEC 61215)</b>	[Pa]	5400	<b>Permitted module temperature on continuous duty</b>	-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.

HANWHA Q.CELLS GMBH

OT Thalheim, Sonnenallee 17-21  
06766 Bitterfeld-Wolfen, Germany

**TEL** +49 (0)3494 66 99-23444  
**FAX** +49 (0)3494 66 99-23000

**EMAIL** sales@q-cells.com  
**WEB** www.q-cells.com

