



# Q.PLUS BFR-G4.1 270-280

## Q.ANTUM SOLAR MODULE

The new high-performance module **Q.PLUS BFR-G4.1** is the ideal solution for all applications thanks to its innovative cell technology **Q.ANTUM**. The world-record cell design was developed to achieve the best performance under real conditions – even with low radiation intensity and on clear, hot summer days.



### Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY

Higher yield per surface area and lower BOS costs and higher power classes and an efficiency rate of up to 17.1 %.



### INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behaviour.



### ENDURING HIGH PERFORMANCE

Long-term yield security with Anti-PID Technology<sup>1</sup>, Hot-Spot Protect and Traceable Quality Tra.Q™.



### EXTREME WEATHER RATING

High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).



### MAXIMUM COST REDUCTIONS

Up to 10% lower logistics costs due to higher module capacity per box.



### A RELIABLE INVESTMENT

Inclusive 12-year product warranty and 25-year linear performance warranty<sup>2</sup>.



### THE IDEAL SOLUTION FOR:



Rooftop arrays on residential buildings



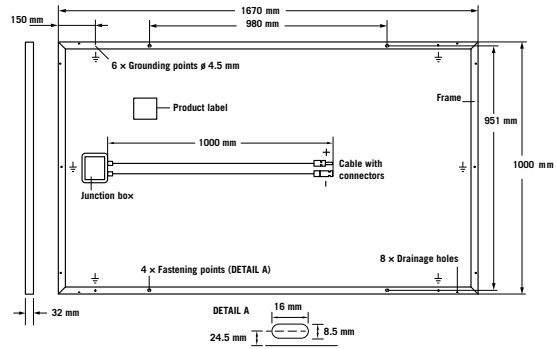
Rooftop arrays on commercial/industrial buildings

<sup>1</sup> APT test conditions: Cells at -1500V against grounded, with conductive metal foil covered module surface, 25 °C, 168h

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

## MECHANICAL SPECIFICATION

<b>Format</b>	1670 mm × 1000 mm × 32 mm (including frame)
<b>Weight</b>	18.8 kg
<b>Front Cover</b>	3.2 mm thermally pre-stressed glass with anti-reflection technology
<b>Back Cover</b>	Composite film
<b>Frame</b>	Black anodised aluminium
<b>Cell</b>	6 × 10 Q.ANTUM solar cells
<b>Junction box</b>	77 mm × 90 mm × 15.8 mm Protection class IP67, with bypass diodes
<b>Cable</b>	4 mm <sup>2</sup> Solar cable; (+) 1000 mm, (-) 1000 mm
<b>Connector</b>	MC4, IP68

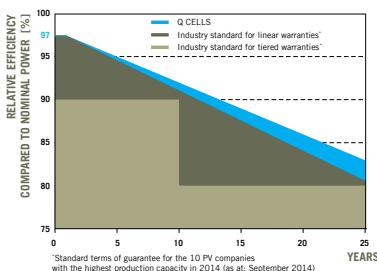


## ELECTRICAL CHARACTERISTICS

POWER CLASS		270	275	280	
<b>MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC<sup>1</sup> (POWER TOLERANCE +5 W / -0 W)</b>					
<b>Minimum</b>	<b>Power at MPP<sup>2</sup></b>	<b>P<sub>MPP</sub></b>	270	275	280
	<b>Short Circuit Current*</b>	<b>I<sub>SC</sub></b>	9.29	9.35	9.41
	<b>Open Circuit Voltage*</b>	<b>V<sub>OC</sub></b>	38.46	38.72	38.97
	<b>Current at MPP*</b>	<b>I<sub>MPP</sub></b>	8.70	8.77	8.84
	<b>Voltage at MPP*</b>	<b>V<sub>MPP</sub></b>	31.04	31.36	31.67
	<b>Efficiency<sup>2</sup></b>	<b>η</b>	≥ 16.2	≥ 16.5	≥ 16.8
<b>MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOC<sup>3</sup></b>					
<b>Minimum</b>	<b>Power at MPP<sup>2</sup></b>	<b>P<sub>MPP</sub></b>	199.6	203.3	207.0
	<b>Short Circuit Current*</b>	<b>I<sub>SC</sub></b>	7.49	7.54	7.58
	<b>Open Circuit Voltage*</b>	<b>V<sub>OC</sub></b>	35.89	36.13	36.37
	<b>Current at MPP*</b>	<b>I<sub>MPP</sub></b>	6.81	6.87	6.93
	<b>Voltage at MPP*</b>	<b>V<sub>MPP</sub></b>	29.30	29.59	29.87

<sup>1</sup>1000 W/m<sup>2</sup>, 25 °C, spectrum AM 1.5 G    <sup>2</sup>Measurement tolerances STC ± 3%; NOC ± 5%    <sup>3</sup>800 W/m<sup>2</sup>, NOCT, spectrum AM 1.5 G    \* typical values, actual values may differ

## Q CELLS PERFORMANCE WARRANTY

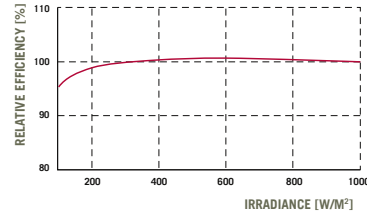


At least 97% of nominal power during first year. Thereafter max. 0.6% degradation per year.  
At least 92% of nominal power up to 10 years.  
At least 83% of nominal power up to 25 years.

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

\*Standard terms of guarantee for the 10 PV companies with the highest production capacity in 2014 (as at: September 2014)

## PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m<sup>2</sup>).

## TEMPERATURE COEFFICIENTS

<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]	-0.29
<b>Temperature Coefficient of P<sub>MPP</sub></b>	<b>γ</b> [%/K]	-0.40	<b>Normal Operating Cell Temperature</b>	<b>NOCT</b> [°C]	45

## PROPERTIES FOR SYSTEM DESIGN

<b>Maximum System Voltage</b>	<b>V<sub>sys</sub></b> [V]	1000	<b>Safety Class</b>	II
<b>Maximum Reverse Current</b>	<b>I<sub>r</sub></b> [A]	20	<b>Fire Rating</b>	C
<b>Wind/Snow Load</b> (Test-load in accordance with IEC 61215)	[Pa]	4000/5400	<b>Permitted Module Temperature</b> <b>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 our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS GmbH

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**Q CELLS**