

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

## POLYCRYSTALLINE 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.



### LOW ELECTRICITY GENERATION COSTS

Higher yield per surface area and lower BOS costs thanks to 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 behavior.



### ENDURING HIGH PERFORMANCE

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



### LIGHT-WEIGHT QUALITY FRAME

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



### 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 guarantee<sup>2</sup>.



### THE IDEAL SOLUTION FOR:



Rooftop arrays on residential buildings



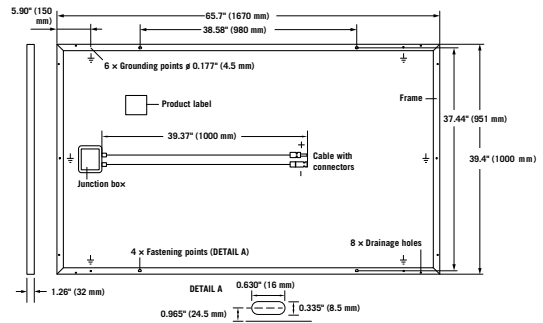
Rooftop arrays on commercial/industrial buildings

<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>	65.7 in × 39.4 in × 1.26 in (including frame) (1670 mm × 1000 mm × 32 mm)
<b>Weight</b>	41.45 lb (18.8 kg)
<b>Front Cover</b>	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
<b>Back Cover</b>	Composite film
<b>Frame</b>	Black anodised aluminum
<b>Cell</b>	6 × 10 Q.ANTUM solar cells
<b>Junction box</b>	3.03 in × 3.54 in × 0.62 in (77 mm × 90 mm × 15.8 mm), Protection class IP67, with bypass diodes
<b>Cable</b>	4 mm <sup>2</sup> Solar cable; (+) ≥ 39.37 in (1000 mm), (-) ≥ 39.37 in (1000 mm)
<b>Connector</b>	MC4, IP68

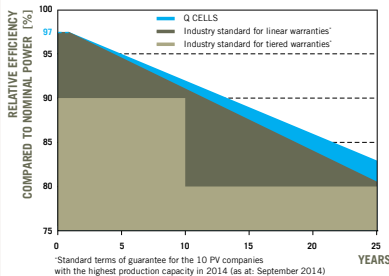


## ELECTRICAL CHARACTERISTICS

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

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

## Q CELLS PERFORMANCE WARRANTY

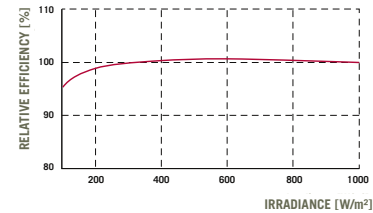


At least 97% of nominal power during first year. Thereafter max. 0.6% degradation per year. At least 92% of nominal power after 10 years. At least 83% of nominal power after 25 years.

All data within measurement tolerances. Full warranties in accordance with the warranty terms of the Q CELLS sales 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 <math>I_{SC}</math></b>	$\alpha$	[%/K]	+0.04	<b>Temperature Coefficient of <math>V_{OC}</math></b>	$\beta$	[%/K]	-0.29
<b>Temperature Coefficient of <math>P_{MPP}</math></b>	$\gamma$	[%/K]	-0.40	<b>Normal Operating Cell Temperature</b>	<b>NOCT</b>	[°F]	113 ± 5.4 (45 ± 3 °C)

## PROPERTIES FOR SYSTEM DESIGN

<b>Maximum System Voltage <math>V_{SYS}</math></b>	[V]	1000 (IEC) / 1000 (UL)	<b>Safety Class</b>	II
<b>Maximum Series Fuse Rating</b>	[A DC]	20	<b>Fire Rating</b>	C (IEC) / TYPE 1 (UL)
<b>Max Load (UL)<sup>2</sup></b>	[lbs/ft <sup>2</sup> ]	75 (3600 Pa)	<b>Permitted module temperature on continuous duty</b>	-40 °F up to +185 °F (-40 °C up to +85 °C)
<b>Load Rating (UL)<sup>2</sup></b>	[lbs/ft <sup>2</sup> ]	55.6 (2666 Pa)	<sup>2</sup> see installation manual	

## QUALIFICATIONS AND CERTIFICATES

UL 1703; VDE Quality Tested; CE-compliant;  
IEC 61215 (Ed.2); IEC 61730 (Ed.1) application class A



## PACKAGING INFORMATION

<b>Number of Modules per Pallet</b>	32
<b>Number of Pallets per 53' Container</b>	32
<b>Number of Pallets per 40' Container</b>	26
<b>Pallet Dimensions (L × W × H)</b>	68.7 in × 45.3 in × 46.1 in (1745 × 1150 × 1170 mm)
<b>Pallet Weight</b>	1435 lb (651 kg)

**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 America Inc.**

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