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[1], Hot-Spot Protect and Traceable Quality Tra.Q™.

LIGHT-WEIGHT QUALITY FRAME
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[2].

EUPD RESEARCH
TOP BRAND PV
MODULES
EUROPE
2015

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

VDE
Quality Tested
✓ high reliability
✓ low degradation
✓ frequent product surveillance
ID. 40032587

Photon
FIELD MEASUREMENT
Q CELLS
Best polycrystalline solar module 2014
Q.PRO-G2 235
174 modules tested

[1] APT test conditions: Cells at -1500V against grounded, with conductive metal foil covered module surface, 25 °C, 168 h
[2] See data sheet on rear for further information.

THE IDEAL SOLUTION FOR:

Rooftop arrays on residential buildings

Rooftop arrays on commercial/industrial buildings

Engineered in **Germany**

Q CELLS

MECHANICAL SPECIFICATION

Format	1670 mm × 1000 mm × 32 mm (including frame)
Weight	18.8 kg
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Black anodised aluminium
Cell	6 × 10 Q.ANTUM solar cells
Junction box	77 mm × 90 mm × 15.8 mm Protection class IP67, with bypass diodes
Cable	4 mm² Solar cable; (+) 1000 mm, (-) 1000 mm
Connector	MC4, IP68

Dimensions diagram: 1670 mm, 980 mm, 150 mm, 6 × Grounding points ø 4.5 mm, Product label, Frame, 951 mm, 1000 mm, Cable with connectors, Junction box, 4 × Fastening points (DETAIL A), 8 × Drainage holes, 32 mm, DETAIL A, 16 mm, 24.5 mm, 8.5 mm
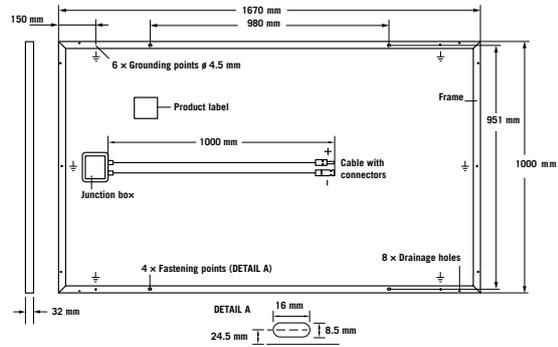
ELECTRICAL CHARACTERISTICS

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

[1] 1000 W/m², 25 °C, spectrum AM 1.5 G   [2] Measurement tolerances STC ±3 %; NOC ±5 %   [3] 800 W/m², NOCT, spectrum AM 1.5 G   * typical values, actual values may differ

Q CELLS PERFORMANCE WARRANTY

- Q CELLS
- Industry standard for linear warranties*
- Industry standard for tiered warranties*

*Standard terms of guarantee for the 10 PV companies with the highest production capacity in 2014 (as at: September 2014)
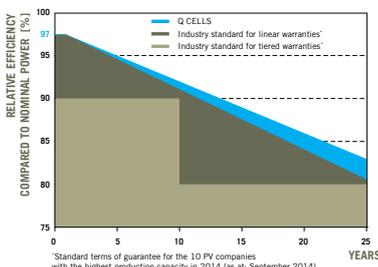
At least 97 % of nominal power during first year. Thereafter max. 0.6 % degradation per year.
At least 92 % of nominal power after 10 years.
At least 83 % of nominal power after 25 years.

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

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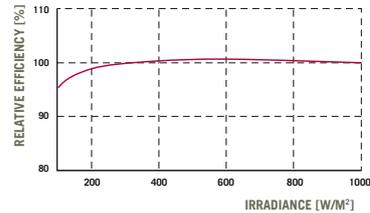
Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I_{SC}	α	[%/K]	+0.04	Temperature Coefficient of V_{OC}	β	[%/K]	−0.29
Temperature Coefficient of P_{MPP}	γ	[%/K]	−0.40	Normal Operating Cell Temperature	NOCT	[°C]	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 (Test-load in accordance with IEC 61215)		[Pa]	4000/5400	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 our technical service department for further information on approved installation and use of this product.

Hanwha Q CELLS GmbH
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

Engineered in **Germany**

Q CELLS