Inspections Division
Date: 12/13/16

# 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[1], 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[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 Q CELLS Best polycrystalline solar module 2014 Q.PRO-G2 235 174 modules tested

[1] APT test conditions: Cells at -1500 V 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

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## MECHANICAL SPECIFICATION

| | |
|---|---|
| **Format** | 65.7 in × 39.4 in × 1.26 in (including frame)<br>(1670 mm × 1000 mm × 32 mm) |
| **Weight** | 41.45 lb (18.8 kg) |
| **Front Cover** | 0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology |
| **Back Cover** | Composite film |
| **Frame** | Black anodised aluminum |
| **Cell** | 6 × 10 Q.ANTUM solar cells |
| **Junction box** | 3.03 in × 3.54 in × 0.62 in (77 mm × 90 mm × 15.8 mm),<br>Protection class IP67, with bypass diodes |
| **Cable** | 4 mm² Solar cable; (+) ≥ 39.37 in (1000 mm), (-) ≥ 39.37 in (1000 mm) |
| **Connector** | MC4, IP68 |

## ELECTRICAL CHARACTERISTICS

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

[1] 1000 W/m², 25 °C, spectrum AM 1.5G [2] Measurement tolerances STC ±3 %; NOC ±5 % [3] 800 W/m², 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.

### 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 | [°F] | 113 ± 5.4 (45 ± 3 °C) |

## PROPERTIES FOR SYSTEM DESIGN

| | | | | |
|---|---|---|---|---|
| Maximum System Voltage $V_{SYS}$ | [V] | 1000 (IEC) / 1000 (UL) | Safety Class | II |
| Maximum Series Fuse Rating | [A DC] | 20 | Fire Rating | C (IEC) / TYPE 1 (UL) |
| Max Load (UL)[2] | [lbs/ft²] | 75 (3600 Pa) | Permitted module temperature on continuous duty | −40 °F up to +185 °F<br>(−40 °C up to +85 °C) |
| Load Rating (UL)[2] | [lbs/ft²] | 55.6 (2666 Pa) | [2] see installation manual | |

## QUALIFICATIONS AND CERTIFICATES

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

C Certified UL 1703 (254141) US

## PACKAGING INFORMATION

| | |
|---|---|
| Number of Modules per Pallet | 32 |
| Number of Pallets per 53' Container | 32 |
| Number of Pallets per 40' Container | 26 |
| Pallet Dimensions ( L × W × H ) | 68.7 in × 45.3 in × 46.1 in<br>(1745 × 1150 × 1170 mm) |
| Pallet Weight | 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.

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