

CIGS SOLAR MODULE

Q.SMART 80-95

Generation 1.3 - Efficiency and aesthetics have a new name

With up to 13.4 %, our CIGS solar modules of the Q.SMART series are the most efficient thin-film modules on the market. The outstanding low-light behaviour as well as the extra power due to positive sorting and light soaking effect make them ideal for challenging installations. Q.SMART is our all-rounder for private rooftops and facades.

THE NEW Q-CELLS GENERATION

- World's best efficiencies up to 13.4 %: **Highest yields per installed area.**
- Anti PID Technology (APT)[1]: **No power loss caused by potential induced degradation.**
- Outstanding diffuse and low-light behaviour for 360° Efficiency (TDE): **High yields even in challenging roof expositions - north, west, south, east.**

THE PROVEN Q-CELLS VALUES

- Additional Power Boost (APB) with up to 15 % additional output due to positive sorting (+5 / -0W) and light soaking effect: **More power for your money.**
- Black surface and black aluminum frame: **Excellent visual appearance.**
- Tested for 5,400 Pa: **Strong in every weather condition.**
- 25 years linear performance warranty, 10 years product warranty[2], even for installations < 30 kWp: **Secure investment.**



THE IDEAL SOLUTION FOR:

ROOFTOP ARRAYS ON RESIDENTIAL BUILDINGS

FACADE INSTALLATIONS

[1] APT test conditions: Cells at -600 V relative to frame, wet module surface, 25 °C, 300 h

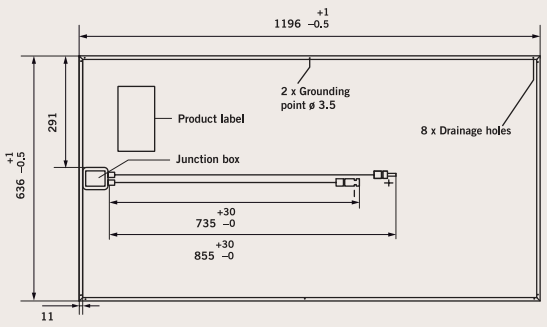
[2] Performance warranty: min. 100 % of nominal power in the first 3 years; max. 0.7 % degradation per year from year 4; min. 85 % of nominal power after 25 years. Full product and performance warranties in accordance with the valid regional warranty terms.

Q.CELLS

MECHANICAL SPECIFICATION

Length	1196 (+1/-0.5) mm
Width	636 (+1/-0.5) mm
Height	36 mm (incl. junction box and frame)
Weight	14.5 kg
Front Cover	4 mm tempered low iron glass
Back Cover	3 mm float glass
Frame	Black anodised aluminium
Cell Type	CIGS [Cu(In, Ga) Se_2]
Junction box	Protection class IP 65, with 1 bypass diode (3 A) 66 x 54 x 15 mm^3
Cable type	Solar cable 2.5 mm^2; (+) 855 (+30/-0) mm; (–) 735 (+30/-0) mm
Connector	MC4

TECHNICAL DRAWING



ELECTRICAL CHARACTERISTICS

PERFORMANCE AT STANDARD TEST CONDITIONS (STC: 1000 W/m², 25 °C, AM 1.5 SPECTRUM)[1]

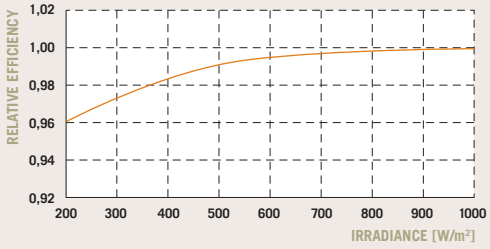
POWER CLASS			80	85	90	95
Nominal Power (+5/-0 Wp)	P_{MAX}	[W]	80.0	85.0	90.0	95.0
Short Circuit Current	I_{SC}	[A]	1.66	1.67	1.67	1.68
Open Circuit Voltage	V_{OC}	[V]	74.5	75.2	76.5	78.0
Current at Maximum Power	I_{MPP}	[A]	1.42	1.44	1.48	1.53
Voltage at Maximum Power	V_{MPP}	[V]	56.4	59.0	60.8	62.1
Nominal Efficiency	η	[%]	≥10.5	≥11.2	≥11.8	≥12.5

PERFORMANCE AT NORMAL OPERATING CELL TEMPERATURE (NOCT: 800 W/m², 51 ±2 °C, AM 1.5 SPECTRUM)

POWER CLASS			80	85	90	95
Nominal Power	P_{MAX}	[W]	57.8	61.4	65.1	68.7
Short Circuit Current	I_{SC}	[A]	1.33	1.33	1.33	1.34
Open Circuit Voltage	V_{OC}	[V]	67.8	68.4	69.6	71.0
Current at Maximum Power	I_{MPP}	[A]	1.13	1.14	1.18	1.22
Voltage at Maximum Power	V_{MPP}	[V]	51.2	53.5	55.2	56.3

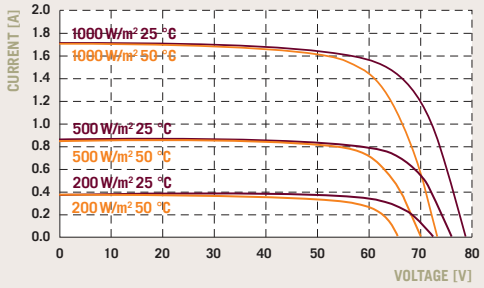
[1] Measurement accuracy P_{MPP}: ±5 %; measurement accuracy I_{SC}, V_{OC}, I_{MPP}, V_{MPP}: ±10 %. All STC measurements based on pre-treatement of modules with 1 hour light soak (1000 W/m² [1 kWh/m²], in open circuit) followed by cool down to 25 °C. For the system conception, please take into account the typical relative V_{OC} and V_{MPP} power increase of 2.5 % after 215 kWh/m² light soaking. This power boost is not included in the nominal values of this data sheet.

PERFORMANCE AT LOW IRRADIANCE



The typical relative change in module efficiency (at nominal power) at an irradiance of 200 W/m² in relation to 1000 W/m² (both at 25 °C and AM 1.5 spectrum) is -4.0 % rel.

CHARACTERISTICS AT DIFFERENT TEMPERATURES AND IRRADIANCES



TEMPERATURE COEFFICIENTS (AT 1000 W/m², AM 1.5 SPECTRUM)

Temperature Coefficient of I_{SC}	α	[%/K]	+ 0.00 ±0.04	**Temperature Coefficient of V_{OC}**	β	[%/K]	−0.29 ±0.04
Temperature Coefficient of P_{MAX}	γ	[%/K]	−0.38 ±0.04				

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 600 (UL 1703)	**Safety Class**	II
Maximum Reverse Current I_R	[A]	5.1	**Fire Rating**	C
Snow Load/Wind Load	[Pa]	5400/2400	**Permitted module temperature on continous duty**	-40 °C up to +85 °C

QUALIFICATIONS AND CERTIFICATES

IEC 61646 (Ed. 2), IEC 61730 (Ed.1) application class A, UL 1703
The production site is certified according to ISO 9001 for Quality Management.

Safety Class II

C Certified US
UL 1703

The content of this data sheet is according to 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.

Specifications subject to technical changes © Q-Cells SE Q.Smart_G1.3_English_2011-09_03

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