

CIGS SOLAR MODULE

Q.SMART 75-95

Sophisticated design for a broad range of applications

Q-Cells is now applying the skills perfected over years of solar cell manufacture to solar module production. Q.SMART solar modules offer the world's highest efficiencies for thin-film modules. The reliable „Made in Germany“ quality and the particularly appealing design qualify them for rooftop arrays and building-integrated installations alike.

QUALITY „MADE IN GERMANY“ FOR HIGHLY RELIABLE YIELDS

- World's best efficiencies up to 13 % for thin-film modules in mass production
- High yields due to good temperature behavior and low-light performance
- Particularly efficient, even in cases of partial shading and unfavorable roof orientation and ventilation, thanks to advantageous cell geometry
- Long-term weather resistance due to durable glass encapsulation
- Further optimization of output due to positive sorting +5/-0 Wp

ATTRACTIVE AND AESTHETICAL VISUAL APPEARANCE

- Outstanding design with homogeneous black surface and black aluminum frame

SIMPLE, COST-EFFECTIVE INSTALLATION

- Wide clamping range for cost-efficient mounting on roof hooks
- Approved for increased snow and wind loads of up to 5400 Pa
- Minimal wiring effort required, as the module itself has high reverse current resistance

STEADY, GUARANTEED PERFORMANCE

- 10-year product warranty*
- 25-year performance warranty*
- Free module recycling through membership in the PV Cycle Association**



* ACCORDING TO THE RESPECTIVE EFFECTIVE REGIONAL WARRANTY TERMS. PERFORMANCE WARRANTY: 90 % OF INITIAL EFFICIENCY UP TO 10 YEARS, 80 % UP TO 25 YEARS
 ** IN MEMBER COUNTRIES ONLY, SEE WWW.PVCYCLE.COM

MECHANICAL SPECIFICATION		TECHNICAL DRAWING
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 anodized 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	

ELECTRICAL CHARACTERISTICS

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

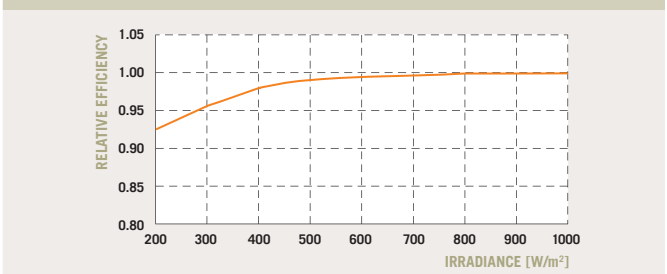
POWER CLASS			75	80	85	90	95
Nominal Efficiency	η	[%]	9.9	10.5	11.2	11.8	12.5
Nominal Power (+5/-0 Wp)	P_{MAX}	[W]	75.0	80.0	85.0	90.0	95.0
Short Circuit Current	I_{SC}	[A]	1.66	1.67	1.68	1.69	1.70
Open Circuit Voltage	V_{OC}	[V]	70.5	71.8	73.1	75.1	77.2
Current at Maximum Power	I_{MPP}	[A]	1.42	1.46	1.49	1.52	1.55
Voltage at Maximum Power	V_{MPP}	[V]	52.7	54.8	57.2	59.2	61.3

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

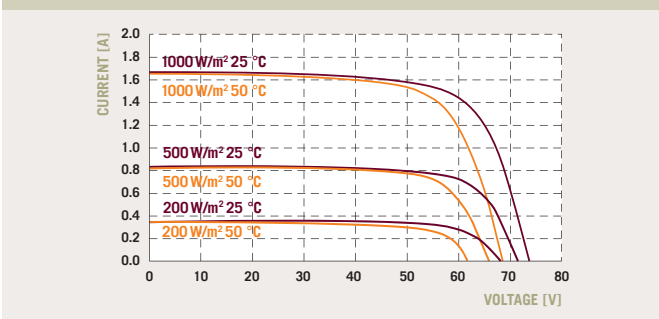
POWER CLASS			75	80	85	90	95
Nominal Power	P_{MAX}	[W]	54.3	57.9	61.5	65.1	68.8
Short Circuit Current	I_{SC}	[A]	1.33	1.33	1.34	1.35	1.36
Open Circuit Voltage	V_{OC}	[V]	64.1	65.2	66.5	68.3	70.2
Current at Maximum Power	I_{MPP}	[A]	1.13	1.16	1.18	1.21	1.23
Voltage at Maximum Power	V_{MPP}	[V]	47.8	49.7	51.8	53.7	55.6

¹ The accuracy of P_{max} is ± 3%. I_{sc} , V_{oc} , I_{mpp} , V_{mpp} are within ± 10% of the indicated values. All STC measurements based on pre-treatment of modules with 1 hour light soak (1000 W/m², in open circuit) followed by cool down to 25 °C.

PERFORMANCE AT LOW IRRADIANCE CHARACTERISTICS AT DIFFERENT TEMPERATURES AND IRRADIANCES



The typical relative change in module efficiency at an irradiance of 200 W/m² in relation to 1000 W/m² (both at 25 °C and AM 1.5 spectrum) is -7%.



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

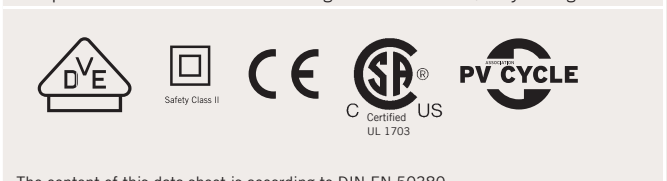
Temperature Coefficient of I_{SC}	α	[%/K]	-0.01 ± 0.04	Temperature Coefficient of V_{OC}	β	[%/K]	-0.30 ± 0.04
Temperature Coefficient of P_{MAX}	γ	[%/K]	-0.38 ± 0.04				

PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V_{SYS}	[V]	1000 (IEC) / 600 (UL 1703)	Safety Class	II
Maximum Reverse Current I_R	[A]	6.5	Fire Rating	C
Wind/Snow Load	[Pa]	5400	Permitted module temperature on continuous duty	-40 °C up to +85 °C

QUALIFICATIONS AND CERTIFICATES PARTNER

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.



The content of this data sheet is according to DIN EN 50380.

Specifications subject to technical changes © Q.Cells SE Q.Smart_G1.1_Englsh_12/2010_03

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.