

ROOFTOP ARRAYS ON
RESIDENTIAL BUILDINGS



SMALL ROOFTOP ARRAYS
ON COMMERCIAL /
INDUSTRIAL BUILDINGS



FACADE
INSTALLATIONS



ROOF-PARALLEL FLAT
ROOF INSTALLATIONS

CIGS SOLAR MODULE

Q.SMART UF 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. The frameless **Q.SMART UF** solar modules offer the world's highest efficiency for thin-film modules. The reliable „Made in Germany“ quality and the particularly appealing design qualify them for rooftop arrays and facade installations alike.

QUALITY „MADE IN GERMANY“ FOR HIGHLY RELIABLE YIELDS

- World's best efficiencies of 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, thanks to advantageous cell geometry
- Long-term weather resistance due to durable glass encapsulation
- Efficient self-cleaning due to lack of raised edges
- Further optimization of output due to positive sorting +5/-0 Wp

ATTRACTIVE AND AESTHETICAL VISUAL APPEARANCE

- Outstanding design with homogeneous black surface and black edge sealing

SIMPLE, COST-EFFECTIVE INSTALLATION

- Mounting options for every inclination - from flatroofs to facades
- 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 EFFICIENCY: 90% OF THE INITIAL EFFICIENCY UP TO 10 YEARS, 80% UP TO 25 YEARS
** IN PV CYCLE MEMBER COUNTRIES ONLY, SEE WWW.PVCYCLE.COM

MECHANICAL SPECIFICATION		TECHNICAL DRAWING	
Length	1190 (+3/-1) mm	<p>Technical drawing of a solar module showing dimensions and components. The drawing includes a product label, junction box, and four clamping areas. Dimensions are given in mm with tolerances: Length 1190 (+3/-1), Width 630 (+3/-1), Height 288, Product label 66 x 54 x 15 mm³, Cable type Solar cable 2.5 mm²; (+) 855 (+30/-0) mm; (-) 735 (+30/-0) mm, Connector MC4.</p>	
Width	630 (+3/-1) mm		
Height	7.3 mm (+ Junction box, 15 mm)		
Weight	13.2 kg		
Front Cover	4 mm tempered low iron glass		
Back Cover	3 mm float glass		
Frame	None		
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⁾

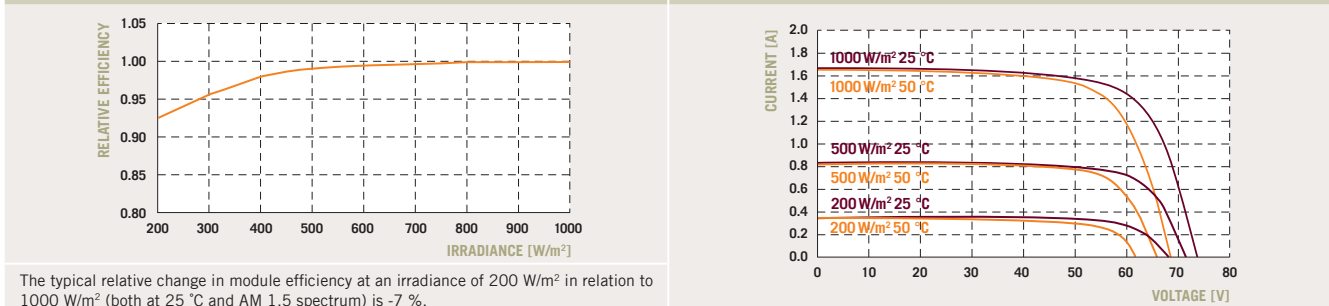
POWER CLASS			75	80	85	90	95
Nominal Efficiency	η	[%]	10.0	10.7	11.3	12.0	12.7
Nominal Power (+5/-0 Wp)	P_{MAX}	[W]	75.0	80.0	85.0	90.0	95.0
Short Circuit Current	I_{SC}	[A]	1.66	1.67	1.68	1.69	1.70
Open Circuit Voltage	V_{OC}	[V]	70.5	71.8	73.1	75.1	77.2
Current at Maximum Power	I_{MPP}	[A]	1.42	1.46	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 power classes are defined by positive sorting (+5W/-0W) according to measured. The accuracy of P_{MAX} (STC) is ± 3 %. I_{SC} , V_{OC} , I_{MPP} , V_{MPP} are within ± 10 % of the indicated values under STC. STC performance data obtained by pretreating the modules before measurement 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]	2400	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.

Content of this data sheet according to DIN EN 50380.

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.

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