

## Features

- Breaking the 21 % efficiency barrier  
PERC Technology with zero gap cell layout boosts module efficiency up to 21.7 %.
- Low electricity generation costs  
Higher yield per surface area, lower BOS costs and up to 175 watts more module power than standard 144 half-cell modules.
- Enduring high performance  
Long-term yield security thanks to regular PID and Hot-Spot tests according to IEC requirements.
- Extreme weather rating  
High-tech aluminium alloy frame, certified for high snow (5400 Pa) and wind loads (2400 Pa).
- A reliable investment  
Inclusive 12-year product warranty and 25-year linear performance warranty.

## Applications

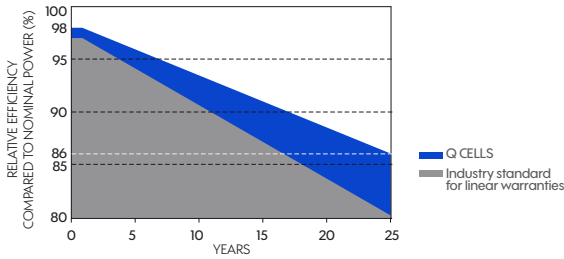
- Educational Centers
- Industry
- Pig farm
- Residence
- Office
- Restaurant
- Gymnasium





# Q CELLS 460 W Specs

## Q CELLS Performance Warranty

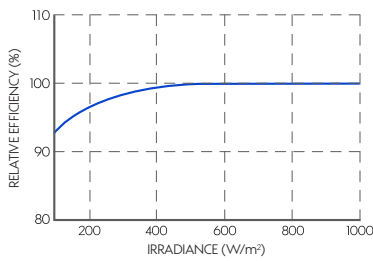


At least 98 % of nominal power during first year. Thereafter max. 0.5 % degradation per year. At least 93.5 % of nominal power up to 10 years. At least 86 % of nominal power up to 25 years.

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

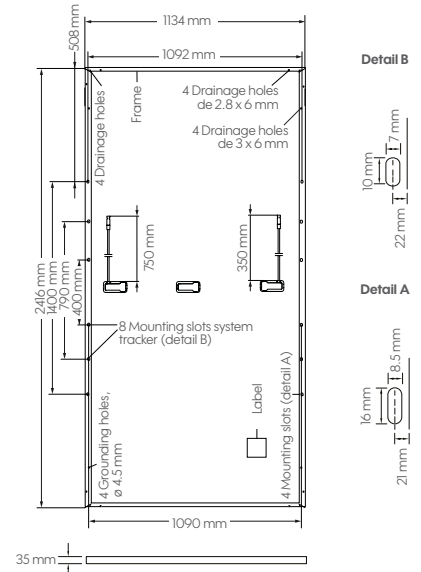
\* Standard terms of guarantee for the 10 PV companies with the highest production capacity in 2014 (as at: September 2014)

## Performance at low Irradiance



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

## 575 W Solar panel dimensions



## Packaging Information

Number of Modules per Pallet	31
Number of Pallets per 40' HC-Container (26 t)	16
Pallet Dimensions (L x W x H) (mm)	1270 x 1134 x 245.8
Pallet Weight (kg)	1000

## Model

## 460 W Solar Panel

### Mechanical Specifications

Format (mm)	2416 x 1134 x 35 (including frame)	
Weight (kg)	30.70	
Front Cover	3.2 mm thermally pre-stressed glass with anti-reflection technology	
Back Cover	Composite film	
Frame	Anodised aluminium	
Cell	6 x 26 monocrystalline Q.ANTUM solar half cells	
Junction box	53-101 mm x 32-60 mm x 15-18 mm, Protection class IP67, with bypass diodes	
Cable	4 mm² Solar cable; (+) ≥ 1450 mm, (-) ≥ 1450 mm	
Connector	Stäubli MC4-Evo2, Hanwha Q CELLS HQC4; IP68	

### Power Class

MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STCI (POWER TOLERANCE +5 W / -0 W)

Parameter	Symbol	Unit	Value
Power at MPP <sup>1</sup>	P <sub>MPP</sub>	(W)	575
Short Circuit Current <sup>1</sup>	I <sub>sc</sub>	(A)	13.51
Open Circuit Voltage <sup>1</sup>	V <sub>oc</sub>	(V)	53.62
Current at MPP	I <sub>MPP</sub>	(A)	12.87
Voltage at MPP	V <sub>MPP</sub>	(V)	44.68
Efficiency <sup>1</sup>	η	(%)	≥ 21.0

MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT<sup>2</sup>

Parameter	Symbol	Unit	Value
Power at MPP	P <sub>MPP</sub>	(W)	431.4
Short Circuit Current	I <sub>sc</sub>	(A)	10.89
Open Circuit Voltage	V <sub>oc</sub>	(V)	50.56
Current at MPP	I <sub>MPP</sub>	(A)	10.13
Voltage at MPP	V <sub>MPP</sub>	(V)	42.58

### Temperature Coefficients

Parameter	Symbol	Unit	Value
Temperature Coefficient of I <sub>sc</sub>	α	(%/K)	+ 0.04
Temperature Coefficient of P <sub>MPP</sub>	γ	(%/K)	- 0.34
Temperature Coefficient of V <sub>oc</sub>	β	(%/K)	- 0.27
Nominal Module Operating Temperature	NMOT	(°C)	43 ± 3

### Propiedades para el diseño del sistema

Maximum System Voltage	V <sub>sys</sub>	(V)	1500 (IEC) / 1500 (UL)
Maximum Reverse Current		(A DC)	20
Max. Design Load, Push / Pull		(lbs/ft²)	75 (3600 Pa) / 33 (1600 Pa)
Max. Test Load, Push / Pull		(lbs/ft²)	113 (5400 Pa) / 50 (2400 Pa)
PV module classification			II
Fire Rating based on ANSI / UL 1703			C / TIPO I
Permitted Module Temperature on continuous duty			-40 - +85 °C

### Qualifications and Certificates

Certificates	Complies with CE, IEC 61215:2016, IEC 61730:2016		
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<sup>1</sup> Measurement tolerances P<sub>MPP</sub> ± 3 %; I<sub>sc</sub>; V<sub>oc</sub> ± 5 % at STC: 1000 W/m², 25 ± 2 °C, AM 1.5 according to IEC 60904-3 · 2 800 W/m², NMOT, spectrum AM 1.5

The specifications are subject to changes and modifications without prior notice, due to our commitment of continuous improvement of reliability, design and functionality of our products