

ENDURING HIGH PERFORMANCE











# Q.ANTUM TECHNOLOGY: LOW LEVELIZED COST OF ELECTRICITY

Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.8%.



## **INNOVATIVE ALL-WEATHER TECHNOLOGY**

Optimal yields, whatever the weather with excellent low-light and temperature behavior.



### **ENDURING HIGH PERFORMANCE**

 $\label{log-term} \mbox{Liong-term yield security with Anti LID and Anti PID Technology$^1$,} \\ \mbox{Hot-Spot Protect and Traceable Quality Tra.Q$^{TM}$.}$ 



## **EXTREME WEATHER RATING**

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (4000 Pa).



### A RELIABLE INVESTMENT

Inclusive 25-year product warranty and 25-year linear performance warranty<sup>2</sup>.



# STATE OF THE ART MODULE TECHNOLOGY

Q.ANTUM DUO combines cutting edge cell separation and innovative 12-busbar design with Q.ANTUM Technology.

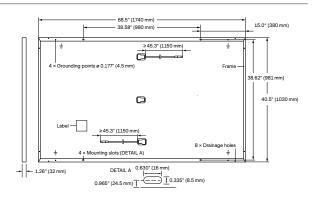
# THE IDEAL SOLUTION FOR:





<sup>&</sup>lt;sup>1</sup> APT test conditions according to IEC/TS 62804-1:2015, method B (-1500 V, 168 h)

 $<sup>^{\</sup>rm 2}$  See data sheet on rear for further information

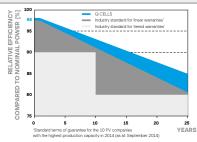


### **ELECTRICAL CHARACTERISTICS**

WER CLASS			335	340	345	350			
IIMUM PERFORMANCE AT STANDARD TES	T CONDITIC	NS, STC¹ (F	POWER TOLERANCE +5 W / -0	)W)					
Power at MPP¹	P <sub>MPP</sub>	[W]	335	340	345	350			
Short Circuit Current <sup>1</sup>	I <sub>sc</sub>	[A]	10.34	10.40	10.45	10.51			
Open Circuit Voltage <sup>1</sup>	V <sub>oc</sub>	[V]	40.44	40.70	40.95	41.21			
Current at MPP	I <sub>MPP</sub>	[A]	9.85	9.90	9.96	10.01			
Voltage at MPP	$V_{MPP}$	[V]	34.01	34.34	34.65	34.97			
Efficiency <sup>1</sup>	η	[%]	≥18.7	≥19.0	≥19.3	≥19.5			
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT <sup>2</sup>									
Power at MPP	P <sub>MPP</sub>	[W]	250.9	254.6	258.4	262.1			
Short Circuit Current	I <sub>sc</sub>	[A]	8.33	8.38	8.42	8.47			
Open Circuit Voltage	V <sub>oc</sub>	[V]	38.13	38.38	38.62	38.86			
Current at MPP	I <sub>MPP</sub>	[A]	7.75	7.79	7.84	7.88			
Voltage at MPP	V <sub>MPP</sub>	[V]	32.36	32.67	32.97	33.27			
	Power at MPP¹ Short Circuit Current¹ Open Circuit Voltage¹ Current at MPP Voltage at MPP Efficiency¹ NIMUM PERFORMANCE AT NORMAL OPER/ Power at MPP Short Circuit Current Open Circuit Voltage Current at MPP	NIMUM PERFORMANCE AT STANDARD TEST CONDITION  Power at MPP¹ P <sub>MPP</sub> Short Circuit Current¹ I <sub>SC</sub> Open Circuit Voltage¹ V <sub>OC</sub> Current at MPP I <sub>MPP</sub> Voltage at MPP V <sub>MPP</sub> Efficiency¹   NIMUM PERFORMANCE AT NORMAL OPERATING CONITION  Power at MPP P <sub>MPP</sub> Short Circuit Current I <sub>SC</sub> Open Circuit Voltage V <sub>OC</sub> Current at MPP I <sub>MPP</sub>	NIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC $^1$ (FP ower at MPP $^1$ P $_{\rm MPP}$ [W]  Short Circuit Current $^1$ I $_{\rm SC}$ [A]  Open Circuit Voltage $^1$ V $_{\rm CC}$ [V]  Current at MPP I $_{\rm MPP}$ [A]  Voltage at MPP V $_{\rm MPP}$ [V]  Efficiency $^1$ $\eta$ [%]  NIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NIP ower at MPP P $_{\rm MPP}$ [W]  Short Circuit Current I $_{\rm SC}$ [A]  Open Circuit Voltage V $_{\rm CC}$ [V]  Current at MPP I $_{\rm MPP}$ [A]	NIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC¹ (POWER TOLERANCE $+5$ W/ $-6$ Power at MPP¹ $P_{MPP}$ [W] 335  Short Circuit Current¹ $P_{MPP}$ [W] 335  Open Circuit Voltage¹ $P_{MPP}$ [V] 40.44  Current at MPP $P_{MPP}$ [V] 40.41  Efficiency¹ $P_{MPP}$ [V] 34.01  Efficiency¹ $P_{MPP}$ [V] 34.01  Efficiency¹ $P_{MPP}$ [V] 34.01  Efficiency¹ $P_{MPP}$ [W] 250.9  Short Circuit Current $P_{MPP}$ [W] 250.9  Short Circuit Current $P_{MPP}$ [W] 38.13  Open Circuit Voltage $P_{MPP}$ [V] 38.13  Current at MPP $P_{MPP}$ [A] 7.75	NIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC¹ (POWER TOLERANCE +5 W / -0 W)   Power at MPP¹   P <sub>MPP</sub> [W]   335   340   Short Circuit Current¹   I <sub>SC</sub> [A]   10.34   10.40   Open Circuit Voltage¹   V <sub>OC</sub> [V]   40.44   40.70   Current at MPP   I <sub>MPP</sub> [A]   9.85   9.90   Voltage at MPP   V <sub>MPP</sub> [V]   34.01   34.34   Efficiency¹   $\eta$ [%]   ≥18.7   ≥19.0   NIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT²   Power at MPP   P <sub>MPP</sub> [W]   250.9   254.6   Short Circuit Current   I <sub>SC</sub> [A]   8.33   8.38   Open Circuit Voltage   V <sub>OC</sub> [V]   38.13   38.38   Current at MPP   I <sub>MPP</sub> [A]   7.75   7.79	NIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC¹ (POWER TOLERANCE +5 W / -0 W)   Power at MPP¹   P <sub>MPP</sub> [W]   335   340   345   Short Circuit Current¹   I <sub>SC</sub> [A]   10.34   10.40   10.45   Open Circuit Voltage¹   V <sub>OC</sub> [V]   40.44   40.70   40.95   Current at MPP   I <sub>MPP</sub> [A]   9.85   9.90   9.96   Voltage at MPP   V <sub>MPP</sub> [V]   34.01   34.34   34.65   Efficiency¹   $\eta$ [%]   ≥18.7   ≥19.0   ≥19.3   NIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT²   Power at MPP   P <sub>MPP</sub> [W]   250.9   254.6   258.4   Short Circuit Current   I <sub>SC</sub> [A]   8.33   8.38   8.42   Open Circuit Voltage   V <sub>OC</sub> [V]   38.13   38.38   38.62   Current at MPP   I <sub>MPP</sub> [A]   7.75   7.79   7.84			

 $^{1}\text{Measurement tolerances P}_{\text{MPP}}\pm3\%; |_{\text{SC}}; V_{\text{OC}}\pm5\% \text{ at STC}; 1000 \text{W/m}^{2}, 25\pm2\text{°C}, \text{AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}800 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}8000 \text{W/m}^{2}, \text{NMOT, spectrum AM 1.5 according to IEC 60904-3} \bullet ^{2}8000 \text{W/m}^{2}, \text{NM$ 

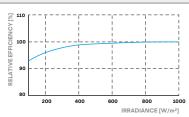
#### Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year. Thereafter max. 0.54% degradation per year. At least 93.1% of nominal power up to 10 years. At least 85% 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 organization 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 <sub>SC</sub>	α	[%/K]	+0.04	Temperature Coefficient of Voc	β	[%/K]	-0.27
Temperature Coefficient of Pugg	V	[%/K]	-0.35	Nominal Module Operating Temperature	NMOT	[°F]	109+54(43+3°C)

# PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage V <sub>SYS</sub>	[V]	1000 (IEC)/1000 (UL)	PV module classification	Class II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating based on ANSI/UL 61730	TYPE 2
Max. Design Load, Push / Pull <sup>3</sup>	[lbs/ft <sup>2</sup> ]	75 (3600 Pa) / 55 (2667 Pa)	Permitted Module Temperature	-40°F up to +185°F
Max. Test Load, Push / Pull <sup>3</sup>	[lbs/ft²]	113 (5400 Pa) / 84 (4000 Pa)	on Continuous Duty	(-40°C up to +85°C)

## QUALIFICATIONS AND CERTIFICATES

## PACKAGING AND TRANSPORT INFORMATION

UL 61730, CE-compliant, VDE Quality Tested, IEC 61215:2016, IEC 61730:2016, U.S. Patent No. 9,893,215 (solar cells)

<sup>3</sup> See Installation Manual









			lb	0-0	40'HC		
Horizontal packaging	 			28 pallets	26 pallets	32 modules	
Vertical packaging		48.0 in 1220 mm		28 pallets	24 pallets	32 modules	

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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. Q CELLS supplies solar modules in two different stacking methods, depending on the location of manufacture (modules are packed horizontally or vertically). You can find more detailed information in the document "Packaging and Transport Information", available from Q CELLS.

#### Hanwha Q CELLS America Inc.