





# Q.ANTUM TECHNOLOGY: LOW LEVELISED COST OF ELECTRICITY

Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 20.3%.



# **INNOVATIVE ALL-WEATHER TECHNOLOGY**

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



# **ENDURING HIGH PERFORMANCE**

Long-term yield security with Anti LID Technology, Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.Q™.



# **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<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:



commercial/industrial buildings

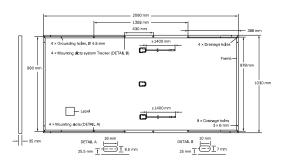


Ground-mounted solar power plants



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

<sup>&</sup>lt;sup>2</sup> See data sheet on rear for further information.



# **ELECTRICAL CHARACTERISTICS**

VER CLASS			415	420	425	430
IMUM PERFORMANCE AT STANDAR	D TEST CONDITIO	NS, STC¹ (PO\	VER TOLERANCE +5 W /	-0W)		
Power at MPP <sup>1</sup>	P <sub>MPP</sub>	[W]	415	420	425	430
Short Circuit Current <sup>1</sup>	I <sub>sc</sub>	[A]	10.69	10.74	10.78	10.83
Open Circuit Voltage <sup>1</sup>	V <sub>oc</sub>	[V]	48.59	48.84	49.09	49.33
Current at MPP	I <sub>MPP</sub>	[A]	10.18	10.22	10.27	10.31
Voltage at MPP	$V_{MPP}$	[V]	40.77	41.08	41.39	41.70
Efficiency <sup>1</sup>	η	[%]	≥19.4	≥19.6	≥19.8	≥20.1
IMUM PERFORMANCE AT NORMAL	OPERATING COND	DITIONS, NMC	T <sup>2</sup>			
Power at MPP	P <sub>MPP</sub>	[W]	310.8	314.5	318.3	322.0
Short Circuit Current	I <sub>sc</sub>	[A]	8.61	8.65	8.69	8.72
Open Circuit Voltage	V <sub>oc</sub>	[V]	45.82	46.05	46.29	46.52
Current at MPP	I <sub>MPP</sub>	[A]	8.01	8.05	8.08	8.12
Voltage at MPP	V <sub>MPP</sub>	[V]	38.79	39.09	39.38	39.67
	IMUM PERFORMANCE AT STANDAR Power at MPP¹ Short Circuit Current¹ Open Circuit Voltage¹ Current at MPP Voltage at MPP Efficiency¹ IMUM PERFORMANCE AT NORMAL Power at MPP Short Circuit Current Open Circuit Voltage Current at MPP	Power at MPP I I I I I I I I I I I I I I I I I I	Note   Part   Part	$\begin{array}{ c c c c c c }\hline \text{IMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC$^1$ (POWER TOLERANCE +5 W/Power at MPP$^1 & P_{MPP} & [W] & 415\\\hline Short Circuit Current$^1 & I_{SC} & [A] & 10.69\\\hline Open Circuit Voltage$^1 & V_{OC} & [V] & 48.59\\\hline Current at MPP & I_{MPP} & [A] & 10.18\\\hline Voltage at MPP & V_{MPP} & [V] & 40.77\\\hline Efficiency$^1 & \P & [\%] & \ge 19.4\\\hline IMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT$^2\\\hline Power at MPP & P_{MPP} & [W] & 310.8\\\hline Short Circuit Current & I_{SC} & [A] & 8.61\\\hline Open Circuit Voltage & V_{OC} & [V] & 45.82\\\hline Current at MPP & I_{MPP} & [A] & 8.01\\\hline \end{array}$	IMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC¹ (POWER TOLERANCE +5 W / −0 W)           Power at MPP¹         P <sub>MFP</sub> [W]         415         420           Short Circuit Current¹         I <sub>SC</sub> [A]         10.69         10.74           Open Circuit Voltage¹         V <sub>CC</sub> [V]         48.59         48.84           Current at MPP         I <sub>MFP</sub> [A]         10.18         10.22           Voltage at MPP         V <sub>MFP</sub> [V]         40.77         41.08           Efficiency¹         η         [%]         ≥19.4         ≥19.6           IMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NMOT²         Power at MPP         P <sub>MFP</sub> [W]         310.8         314.5           Short Circuit Current         I <sub>SC</sub> [A]         8.61         8.65           Open Circuit Voltage         V <sub>OC</sub> [V]         45.82         46.05           Current at MPP         I <sub>MFP</sub> [A]         8.01         8.05	Note of the property of the

¹Measurement 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 • ²800 W/m², NMOT, spectrum AM 1.5

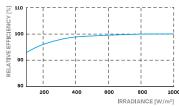
#### Q CELLS PERFORMANCE WARRANTY

# DEFINITION OF THE PROPERTY OF

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 organisation of your respective country.

# PERFORMANCE AT LOW IRRADIANCE



Typical module performance under low irradiance conditions in comparison to STC conditions (25  $^{\circ}\text{C}, 1000\,\text{W/m}^2\text{)}.$ 

TEMPERATURE COEFFICIENTS							
Temperature Coefficient of I <sub>SC</sub>	α	[%/K]	+0.04	Temperature Coefficient of Voc	β	[%/K]	-0.27
Temperature Coefficient of P <sub>MPP</sub>	γ	[%/K]	-0.35	Nominal Module Operating Temperature	NMOT	[°C]	43±3

# PROPERTIES FOR SYSTEM DESIGN

Maximum System Voltage	$V_{\text{SYS}}$	[V]	1500 (IEC)/1500 (UL)	PV module classification	Class II
Maximum Reverse Current	I <sub>R</sub>	[A]	20	Fire Rating based on ANSI/UL 1703	C/TYPE1
Max. Design Load, Push / Pull		[Pa]	3600/1600	Permitted Module Temperature	<b>-</b> 40°C - +85°C
Max Toot Load Bush / Bull		[Dol	540072400	on Continuous Duty	

# **QUALIFICATIONS AND CERTIFICATES**

# **PACKAGING INFORMATION**

IEC 61215:2016; IEC 61730:2016;	Number of Modules per Pallet	30
This data sheet complies with DIN EN 50380.	Number of Pallets per Trailer (24t)	24
	Number of Pallets per 40' HC-Container (26t)	22
C C C C C C C C C C C C C C C C C C C	Pallet Dimensions (L × W × H)	2131×1130×1200 mm
UL 1703 (254141)	Pallet Weight	788ka

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.

#### Hanwha Q CELLS GmbH

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