

MONO CRYSTALLINE - SHINGLED CELL TECHNOLOGY

470 / 475 / 480 / 485 / 490 Watts







Puma Series

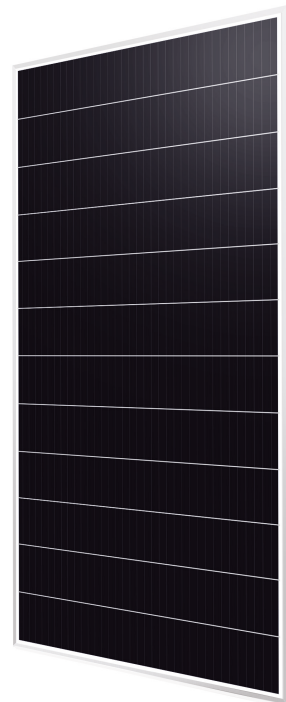


Superior Performance and Reliability

Shingled technology eliminates traditional ribbon connection with shingles connected in series. By removing the soldered ribbons, the active area of the module is improved and thermal stresses are reduced - resulting in exceptional efficiency and reliability over standard interconnections.

Key Benefits

	Higher yield per surface area		Low Pmax Temperature Coefficient
	Higher yield in hot climate		25 Years Limited Product Warranty
	Low LCOE		Low Resistive Losses



Outstanding performance under extreme heat as well as low intensity solar radiation

Pmax

Significantly low Pmax thermal coefficient



Positive Tolerance

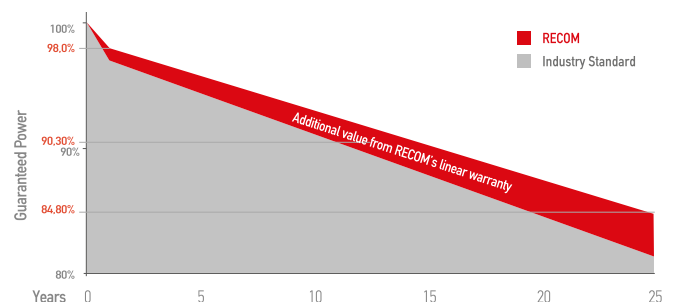


100 % electro-luminescence tested

Tests, Certifications and Warranties

Standard Tests	IEC 61215, IEC 61730
Factory Quality Tests	ISO 9001: 2015, ISO 14001: 2015
Certifications	Conformity to CE, PV CYCLE
Insurance	Product liability insurance provided by Allianz
Wind and Snow Loads Testing	Module certified to withstand extreme wind (2400 Pascal) and snow loads (5400 Pascal)
Power Tolerance	Guaranteed +0%/+5% (STC condition)
Warranties	<ul style="list-style-type: none"> • 25-year limited product warranty • 15-year manufacturer warranty on 90.30% of the nominal performance • 25-year transferable linear power output warranty

Linear Performance Warranty



First Year Output	≥ 98.0%	2-25 Year Decline	≤ 0.55%	25 Year Output	≥ 84.80%
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MONO CRYSTALLINE - SHINGLED CELL TECHNOLOGY

RCM-xxx-SMA (xxx=470-490)

Electrical Characteristics

POWER CLASS ⁽¹⁾			470		475		480		485		490	
Testing Condition			STC	<i>NMOT</i>	STC	<i>NMOT</i>	STC	<i>NMOT</i>	STC	<i>NMOT</i>	STC	<i>NMOT</i>
Maximum Power	Pmax	[Wp]	470	<i>354</i>	475	<i>358</i>	480	<i>361</i>	485	<i>365</i>	490	<i>369</i>
Maximum Power Voltage	Vmp	[V]	38.60	<i>36.80</i>	38.70	<i>36.90</i>	38.80	<i>37.00</i>	38.80	<i>37.00</i>	38.90	<i>37.10</i>
Maximum Power Current	Imp	[A]	12.18	<i>9.62</i>	12.27	<i>9.69</i>	12.37	<i>9.77</i>	12.50	<i>9.87</i>	12.60	<i>9.95</i>
Open Circuit Voltage	Voc	[V]	46.40	<i>44.20</i>	46.50	<i>44.30</i>	46.60	<i>44.40</i>	46.60	<i>44.40</i>	46.70	<i>44.50</i>
Short Circuit Current	Isc	[A]	13.04	<i>10.52</i>	13.10	<i>10.57</i>	13.16	<i>10.62</i>	13.22	<i>10.67</i>	13.28	<i>10.72</i>
Module Efficiency	Eff	[%]	20.10		20.30		20.50		20.70		20.90	
Maximum Series Fuse	IR	[A]	20									
Maximum System Voltage	Vsys	[V]	1000 VDC / 1500 VDC (IEC)									

(1) Measurement Tolerances: P_{max} (± 3%), I_{sc} & V_{oc} (± 5%) - Power Classification 0/+5W

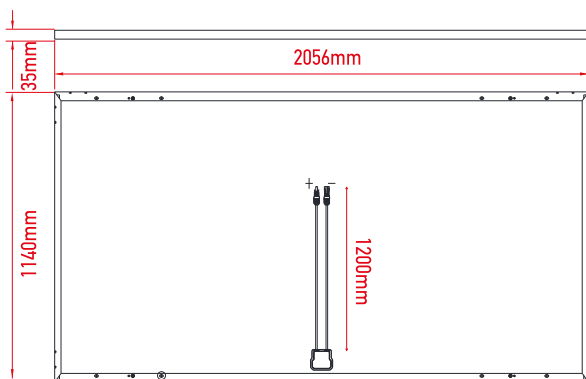
(2) STC (Standard Testing Condition): Irradiance 1000W/m², Cell Temperature 25°C, AM 1.5

(3) NMOT (Nominal Operating Module Temperature): Irradiance 800W/m², NMOT, Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s

Mechanical Data

Dimensions	2056mm x 1140mm x 35mm
Weight	25.0 Kg
Cell Type	PERC Mono-crystalline 166x166mm - M6
Front Glass	3.2mm Tempered and low iron glass + ARC
Backsheet	Anti-aging film
Frame	Anodized Aluminium Alloy
Junction Box	IP68 (2 bypass diodes)
Connector	MC4 compatible
Cable	4.0mm ² - Length 1200mm or customized

Dimensions

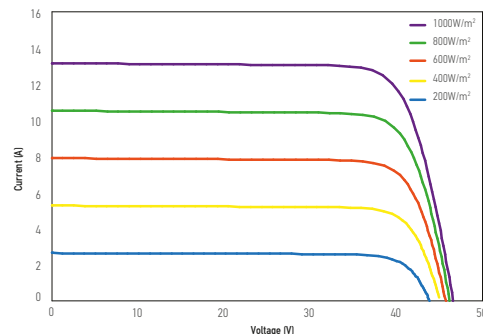


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I-V Curve

The module relative power loss at low light irradiance of 200W/m² is less than 3%.



Temperature Characteristics

P _{max} Temperature Coefficient	-0.34% / °C
V _{oc} Temperature Coefficient	-0.27% / °C
I _{sc} Temperature Coefficient	+0.04% / °C
Operating Temperature	-40~+85 °C
(NMOT) Nominal Module Operating Temperature	42.3 ± 2 °C

Packing Configuration

Container	40'HC
Pieces per Pallet	31
Pallets per Container	22
Pieces per Container	682

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