

## BIFACIAL MONO CRYSTALLINE DOUBLE GLASS MODULE - SHINGLED CELL TECHNOLOGY

630 / 635 / 640 / 645 / 650 / 655 Watts

### Puma Series

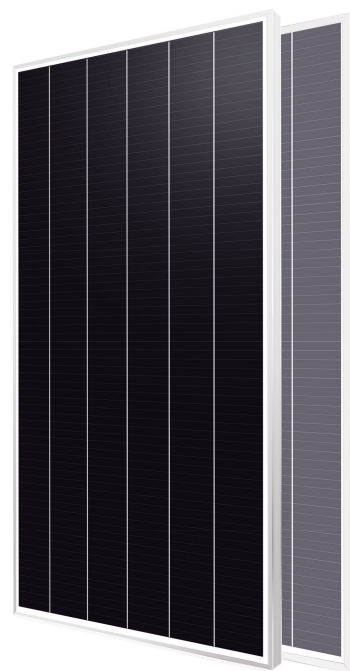


### Superior Performance and Reliability

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



Significantly low Pmax thermal coefficient



Positive Tolerance

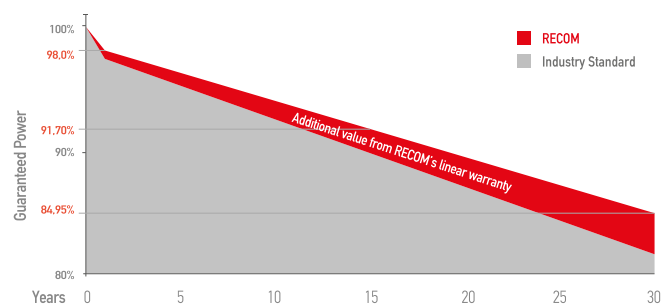


100 % electro-luminescence tested

#### 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"> <li>• 25-year limited product warranty</li> <li>• 15-year manufacturer warranty on 91.70% of the nominal performance</li> <li>• 30-year transferable linear power output warranty</li> </ul>

#### Linear Performance Warranty



First Year Output	≥ 98.0%	2-30 Year Decline	≤ 0.45%	30 Year Output	≥ 84.95%
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RCM-xxx-SBMT (xxx=630-655)

### Electrical Characteristics

POWER CLASS <sup>(1)</sup>			630		635		640		645		650		655	
Testing Condition			STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT	STC	NMOT
Maximum Power	Pmax	[Wp]	630	473	635	476	640	480	645	484	650	488	655	491
Maximum Power Voltage	Vmp	[V]	38,0	36,2	38,1	36,3	38,2	36,4	38,3	36,5	38,3	36,6	38,4	36,6
Maximum Power Current	Imp	[A]	16,57	13,04	16,67	13,12	16,76	13,19	16,86	13,27	16,95	13,34	17,04	13,41
Open Circuit Voltage	Voc	[V]	45.8	43,6	45.9	43,7	46,0	43,8	46,1	43,9	46,2	44,0	46,3	44,1
Short Circuit Current	Isc	[A]	17,63	14,20	17,73	14,28	17,83	14,36	17,93	14,45	18,03	14,53	18,13	14,61
Module Efficiency	Eff	[%]	20,5		20,7		20,9		21,0		21,2		21,3	
Maximum Series Fuse	IR	[A]	30											
Maximum System Voltage	Vsys	[V]	1500V DC											

(1) Measurement Tolerances: P<sub>max</sub> (± 3%), I<sub>sc</sub> & V<sub>oc</sub> (± 5%) - Power Classification 0/+5W

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

(3) NMOT (Nominal Operating Module Temperature): Irradiance 800W/m<sup>2</sup>, NMOT, Ambient Temperature 20°C, AM 1.5, Wind Speed 1m/s

#### Bi Facial Output (4)

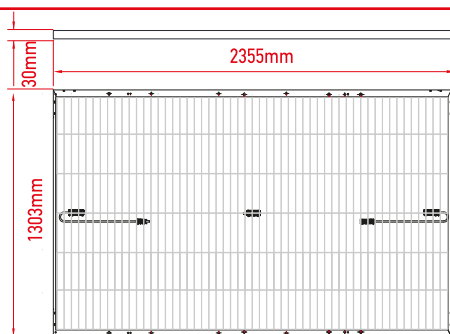
POWER CLASS			630		635		640		645		650		655	
			P <sub>max</sub> [Wp]	Eff [%]	P <sub>max</sub> [Wp]	Eff [%]	P <sub>max</sub> [Wp]	Eff [%]	P <sub>max</sub> [Wp]	Eff [%]	P <sub>max</sub> [Wp]	Eff [%]	P <sub>max</sub> [Wp]	Eff [%]
Power with Backside Gain	+5	[%]	661,5	21,6%	666,8	21,7%	672,0	21,9%	677,3	22,1%	682,5	22,2%	687,8	22,4%
	+10	[%]	693,0	22,6%	698,5	22,8%	704,0	22,9%	709,5	23,1%	715,0	23,3%	720,5	23,5%
	+15	[%]	724,5	23,6%	730,3	23,8%	736,0	24,0%	741,8	24,2%	747,5	24,4%	753,3	24,5%
	+20	[%]	756,0	24,6%	762,0	24,8%	768,0	25,0%	774,0	25,2%	780,0	25,4%	786,0	25,6%
	+25	[%]	787,5	25,7%	793,8	25,9%	800,0	26,1%	806,3	26,3%	812,5	26,5%	818,8	26,7%
	+30	[%]	819,0	26,7%	825,5	26,9%	832,0	27,1%	838,5	27,3%	845,0	27,5%	851,5	27,7%

(4) Bifaciality Factor > 70% - Back-side power gain depends upon the specific project albedo - Efficiency is according to the surface of the module

### Mechanical Data

Dimensions	2355mm x 1303mm x 30mm
Weight	38 Kg
Cell Type	PERC Mono - 210 x 35 mm - 408 pcs - G12
Front Glass	2.0mm Tempered and low iron glass + ARC
Rear Side	2.0mm Tempered and low iron glass
Frame	Anodized Aluminium Alloy
Junction Box	IP68, 3 bypass diodes
Connector	MC4 compatible
Cable	4.0mm <sup>2</sup> - Landscape: (+) 250mm / (-) 150mm Portrait: 800mm or can be customized

### Dimensions

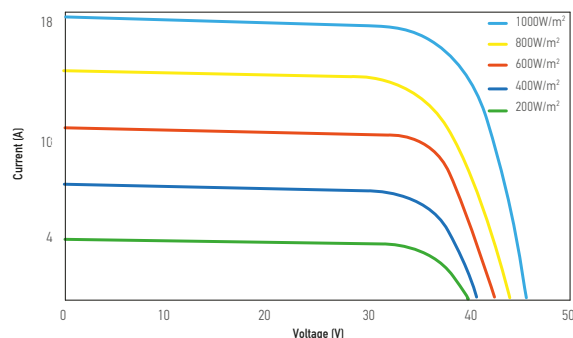


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### I-V Curve

The module relative power loss at low light irradiance of 200W/m<sup>2</sup> is less than 3%.



### Temperature Characteristics

P <sub>max</sub> Temperature Coefficient	-0.36% / °C
V <sub>oc</sub> Temperature Coefficient	-0.28% / °C
I <sub>sc</sub> 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	36
Pallets per Container	16
Pieces per Container	576

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