



## INDUSTRY BENCHMARK SOLAR MODULES

As a global leader in PV energy, First Solar's advanced thin film solar modules have set the industry benchmark with over 10 gigawatts (GW) installed worldwide and a proven performance advantage over conventional crystalline silicon solar modules. Generating more energy than competing modules with the same power rating, First Solar's Series 4™ and Series 4A™ PV Modules deliver superior performance and reliability to our customers.



## PROVEN ENERGY YIELD ADVANTAGE

- Generates more energy than conventional crystalline silicon solar modules with the same power
- Superior temperature coefficient resulting in greater energy yield in typical field operating temperatures
- Superior spectral response resulting in a proven energy yield advantage in humid environments
- Anti-reflective coated glass (Series 4A™) enhances energy production



## ADVANCED PERFORMANCE & RELIABILITY

- Long-term power-output warranted for 25 years
- Compatible with advanced 1500V plant architectures
- Highly predictable energy in all climates and applications
- Independently certified for reliable performance in high temperature, high humidity, extreme desert and coastal environments based on accelerated life and stress tests

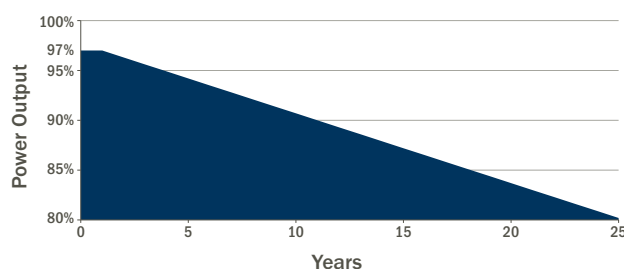


## CERTIFICATIONS & TESTS

- PID-Free, Thresher Test, Long-Term Sequential Test<sup>1</sup>, and ATLAS 25+<sup>12</sup>
- IEC 61646 1500V, IEC 61730 1500V, CE
- IEC 61701 Salt Mist Corrosion, IEC 60068-2-68 Dust and Sand Resistance
- ISO 9001:2008 and ISO 14001:2004
- UL 1703 and ULC 1703 Listed Class B Fire Rating (Class A Spread of Flame)
- CSI Eligible (CA-USA), FSEC (FL-USA), MCS (UK), CEC Listed (Australia), JET (Japan)<sup>1</sup>, SII (Israel)<sup>1</sup>, InMetro (Brazil)<sup>1</sup>



## MODULE WARRANTY<sup>3</sup>



- 25-Year Linear Performance Warranty<sup>4</sup>
- 10-Year Limited Product Warranty

# FIRST SOLAR SERIES 4™ PV MODULE

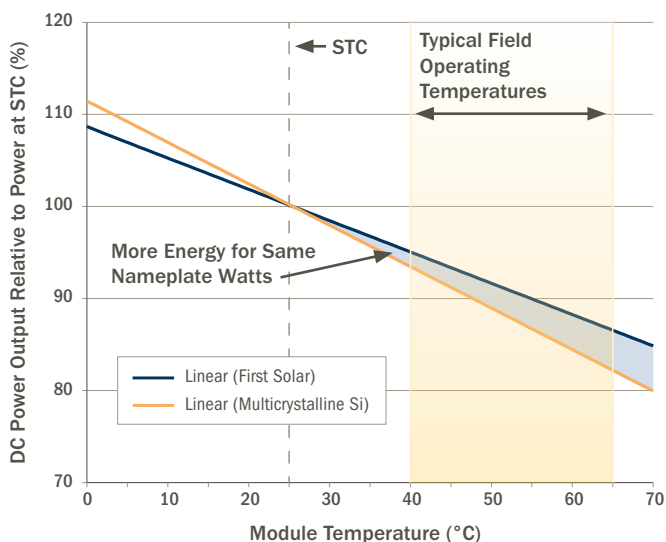
MECHANICAL DESCRIPTION	
Length	1200mm
Width	600mm
Weight	12kg
Thickness	6.8mm
Area	0.72m <sup>2</sup>
Leadwire	2.5mm <sup>2</sup> , 610mm
Connectors	MC4 <sup>9</sup>
Bypass Diode	None
Cell Type	Thin-film CdTe semiconductor, 216 active cells
Frame Material	None
Front Glass	3.2mm heat strengthened  Series 4A™ includes anti-reflective coating
Back Glass	3.2mm tempered
Encapsulation	Laminate material with edge seal

MODULE NUMBERS AND RATINGS AT STC <sup>5,6</sup>									
NOMINAL VALUES		FS-4105-2 FS-4105A-2	FS-4107-2 FS-4107A-2	FS-4110-2 FS-4110A-2	FS-4112-2 FS-4112A-2	FS-4115-2 FS-4115A-2	FS-4117-2 FS-4117A-2		
Nominal Power (± 5%)	P <sub>MPP</sub> (W)	105.0	107.5	110.0	112.5	115.0	117.5		
Voltage at P <sub>MAX</sub>	V <sub>MPP</sub> (V)	67.8	68.6	69.4	70.2	70.5	71.2		
Current at P <sub>MAX</sub>	I <sub>MPP</sub> (A)	1.55	1.57	1.59	1.60	1.63	1.65		
Open Circuit Voltage	V <sub>OC</sub> (V)	86.0	86.6	87.2	87.7	87.8	88.2		
Short Circuit Current	I <sub>SC</sub> (A)	1.74	1.75	1.75	1.75	1.78	1.79		
Maximum System Voltage	V <sub>SYS</sub> (V)	1500 <sup>7</sup> / (1000 UL)							
Limiting Reverse Current	I <sub>R</sub> (A)	4.0							
Maximum Series Fuse	I <sub>CF</sub> (A)	4.0							

MODULE NUMBERS AND RATINGS AT 800W/m <sup>2</sup> , NOCT <sup>8</sup> 45°C, AM 1.5 <sup>6</sup>									
Nominal Power (± 5%)	P <sub>MPP</sub> (W)	78.3	80.1	82.0	83.9	85.8	87.6		
Voltage at P <sub>MAX</sub>	V <sub>MPP</sub> (V)	62.6	63.1	64.1	65.0	65.5	65.9		
Current at P <sub>MAX</sub>	I <sub>MPP</sub> (A)	1.25	1.27	1.28	1.29	1.31	1.33		
Open Circuit Voltage	V <sub>OC</sub> (V)	81.0	81.6	82.1	82.6	82.7	83.1		
Short Circuit Current	I <sub>SC</sub> (A)	1.40	1.41	1.41	1.41	1.44	1.44		

TEMPERATURE CHARACTERISTICS		
Module Operating Temperature Range	(°C)	-40 to +85
Temperature Coefficient of P <sub>MPP</sub>	T <sub>K</sub> (P <sub>MPP</sub> )	-0.34%/°C
Temperature Coefficient of V <sub>OC</sub>	T <sub>K</sub> (V <sub>OC</sub> )	-0.29%/°C
Temperature Coefficient of I <sub>SC</sub>	T <sub>K</sub> (I <sub>SC</sub> )	+0.04%/°C

## SUPERIOR TEMPERATURE COEFFICIENT



## END-OF-LIFE RECYCLING

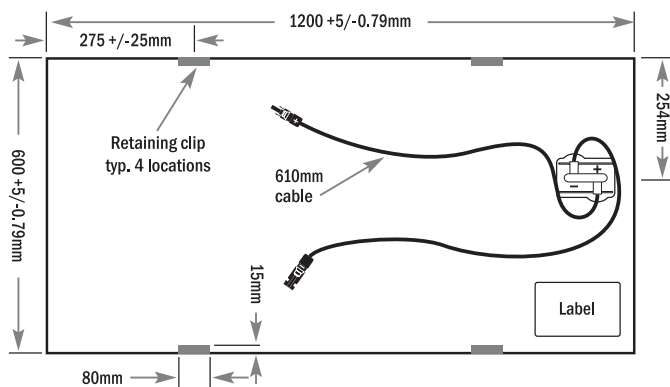
- Recycling services available through First Solar's industry-leading recycling program or customer-selected third party.

### Disclaimer

The information included in this Module Datasheet is subject to change without notice and is provided for informational purposes only. No contractual rights are established or should be inferred because of user's reliance on the information contained in this Module Datasheet. Please refer to the appropriate Module User Guide and Module Product Specification document for more detailed technical information regarding module performance, installation and use.

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## MECHANICAL DRAWING



- Testing Certifications/Listings pending.
- Device package meets ATLAS 25+.
- Limited power output and product warranties subject to warranty terms and conditions.
- Ensures 97% rated power in first year, -0.7%/year through year 25.
- Standard Test Conditions (STC) 1000W/m<sup>2</sup>, AM 1.5, 25°C
- All ratings ±10%, unless specified otherwise. Specifications are subject to change.
- Application Class A for 1000V (class II), Application Class B for 1500V (class 0)
- Nominal Operating Cell Temperature: Module operation temperature at 800W/m<sup>2</sup> irradiance, 20°C air temperature, 1m/s wind speed.
- Multi-Contact MC4 (PV-KST4/PV-KBT4)