



# SLA-X Bifacial



## 290 Wp 60 Cell

### Ultra-High-Efficiency Bifacial PV Module Clear Backsheet



#### REVOLUTIONIZING NORTH AMERICAN BIFACIAL TECHNOLOGY

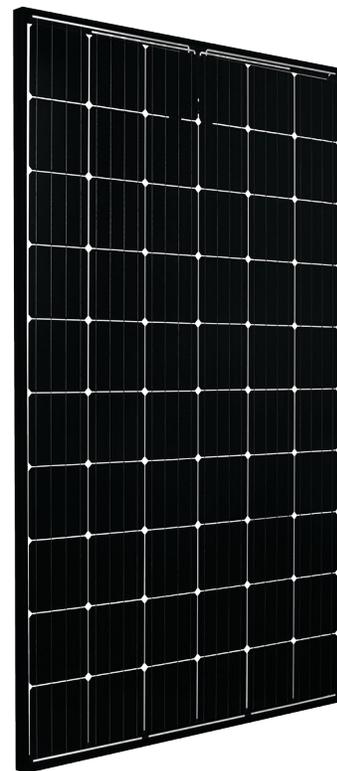
Silfab's Bifacial 290 ultra-high-efficiency modules are optimized with premium N-Type bifacial cells up to 21.5% front efficiency (22.3% module efficiency with up to 30% back side contribution). Designed to be architecturally distinct and delivering low-degradation and maximum power density.

#### REVOLUTIONIZING NORTH AMERICAN QUALITY

Silfab's fully-automated manufacturing facility ensures precision engineering is applied at every step. Superior reliability and performance combine to produce the lowest defect rate in the industry.

#### REVOLUTIONIZING NORTH AMERICAN CUSTOMIZED SERVICE

Silfab's 100% North American based team leverage just-in-time manufacturing to deliver unparalleled on-time delivery and flexible project solutions.



#### ■ HIGHEST BIFACIAL FACTOR

85% of bifaciality factor ( $\epsilon_{ff\ rear} = \epsilon_{ff\ front} \times 0.85$ ), using an N-type cell compared to the  $\approx 50\%$  bifaciality factor of a P-type cell.

#### ■ ENSURES MAXIMUM POWER

290 Wp (front side STC) equal to 364 Wpe (Watt Peak Equivalent) with 30% Bifacial gain.

#### ■ PID RESISTANT

Anti PID (Potential Induced Degradation) technology.

#### ■ HIGHEST AUTOMATION

With over 35 years of industry experience, Silfab's technical team are pioneers in PV technology and are dedicated to an innovative approach that provides superior manufacturing processes including: infra-red cell sorting, glass washing, automated soldering and meticulous cell alignment.

#### ■ 1000 VOLTS

Designed for high-voltage systems of up to 1000 V. 1500 V quoted upon request.

#### ■ ARCHITECTURAL DESIGN

Esthetically designed for premium installations.

#### ■ LID NEAR ZERO

Virtually no LID (Light Induced Degradation) resulting in more power in year one vs. conventional technology.

#### ■ REAR FACE UP TO 30%

Rear face contribution up to +30%.

#### ■ BUILT BY INDUSTRY EXPERTS

The Silfab Bifacial PV module introduces technology developed in partnership with the German institute of research ISC Konstanz and Silfab Solar.

#### ★ 30-YEAR GUARANTEE

100% EL testing = Bankable 30-year performance warranty.

#### ★ LINEAR POWER PERFORMANCE GUARANTEE

Over 88.4% guarantee at the end of the 30th year. Lower power reduction (<0.3%) compared to standard 0.8%/year.

#### ■ POSITIVE TOLERANCE

(-0/+5W) module sorting achieves the maximum electrical performance of the PV system.

#### ■ LOWEST DEFECT RATE\*

Total automation ensures strict quality control during each step of the process at our certified ISO manufacturing facility.

\*82.56 ppm as per December 2017

#### ■ AVAILABLE IN

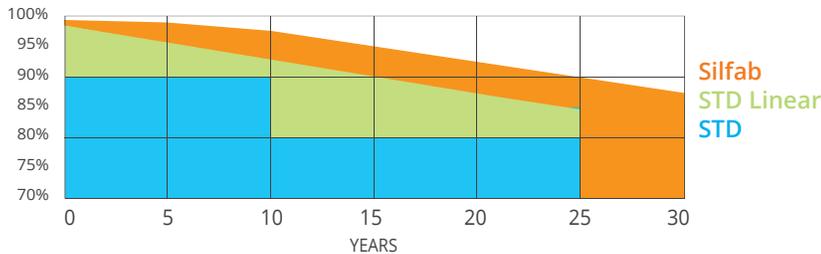
Black Frame

Electrical Specifications	STC at Front	STC at Front + Irradiance % on back side				NOCT at Front
		15%	20%	25%	30%	
Pmp (W)	290	327	339.3	351.6	364	221.1
Imp (A)	8.83	9.95	10.33	10.68	11.04	6.7
Vmp (V)	32.8	32.87	32.88	32.93	32.94	32.84
Isc (A)	9.5	10.57	10.98	11.38	11.77	7.5
Voc (V)	39.4	39.84	39.88	39.92	39.98	38.96
Efficiency	17.8%	20.0%	20.8%	21.5%	22.3%	16.9%

Measurement conditions: STC 1000 W/m<sup>2</sup> • AM 1.5 • Temperature 25 °C • NOCT 800 W/m<sup>2</sup> • AM 1.5 • Temperature 20 °C • Measurement uncertainty ≤ 3% • Sun simulator calibration reference modules from Fraunhofer Institute. Electrical characteristics may vary by ±5% and power by -0/+5W.

Output Power Advantages	STD	Silfab
LID after first week of installation	3.0%	0.3%
Power degradation from 1st to 12th year	0.6%	0.4%
Power degradation from 13th to 30th year	0.75%	0.4%

### Power Warranty Comparison



Temperature Coefficients (at 1000 W/m <sup>2</sup> , 25°C, AM1.5)	SILFAB SLA-X BIFACIAL
Temperature Coefficient Isc	%/C 0.041
Temperature Coefficient Voc	%/C -0.280
Temperature Coefficient Pmax	%/C -0.415
NOCT	°C 43 ± 2

Operating Conditions	SILFAB SLA-X BIFACIAL
Max system Voltage Vsys	1000 VDC Safety Class II
Max reverse Current Ir	15A Fire rating C
Maximum surface load (wind/snow)	Permitted module temperature
Maximum static load, front 5400 Pa (112 lb/ft-sq)	Front 5400 Pa -40°C/+85°C
back 2400 Pa (50 lb/ft-sq)	Back 2400 Pa
Hail Impact Resistance	Ø 25 mm at 83 km/h

### Mechanical Properties and Components

Module weight (± 1 kg)	kg 19
Dimensions (H x L x D; ± 1 mm)	mm 1650 x 990 x 38

Cells	Bifacial N-type cell monocrystalline, 5 busbar, 156.75 x 156.75 mm
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Glass	3.2 mm high transmittance, tempered, antireflective coating
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Encapsulant	PID-resistant POE
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Backsheet	Multilayer polyester-based
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Frame	Anodized Al
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Bypass Diodes	3 diodes-45V/20A
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Cables and connectors (see installation manual)	1200 mm Ø 5.7 mm (4 mm <sup>2</sup> ), MC4 compatible
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### Warranties

Module product warranty	SILFAB SLA-X BIFACIAL
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	12 years
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	30 years
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Linear power performance guarantee	≥ 99.3% end of 1 <sup>st</sup> year
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	≥ 95% end of 12 <sup>th</sup> year
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	≥ 88.4% end of 30 <sup>th</sup> year
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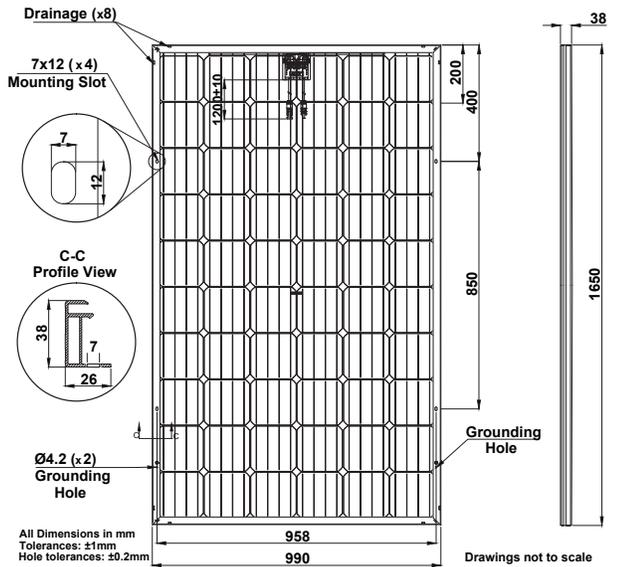
### Certifications

Product	SILFAB SLA-X BIFACIAL
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	ULC ORD C1703, UL 1703, CEC listed
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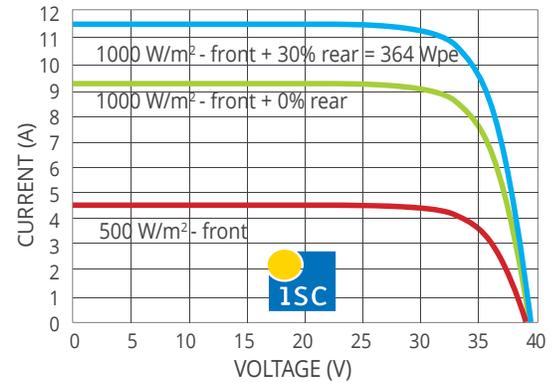
	UL Fire Rating: Type 2 (Type 1 on request)
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Factory	ISO9001:2015
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Warning: Read the installation and User Manual before handling, installing and operating modules.

### Typical I-V curve 290W



Third-party generated pan files from Fraunhofer-Institute for Solar Energy Systems ISE are available for download at: [www.silfabsolar.com/downloads](http://www.silfabsolar.com/downloads)



- Modules Per Pallet: 26
- Pallets Per Truck: 36
- Modules Per Truck: 936



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