

Product Data Sheet

SF130-L

SF140-L

SF145-L

SF150-L



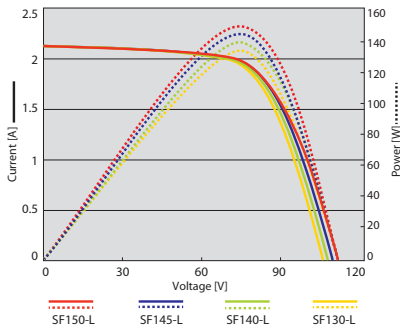
Next Generation CIS

Solar Frontier's new SF130–150 module series offers the highest conversion efficiency of any mass-produced thin-film module, up to 12.2%. The modules feature the light-soaking effect unique to Solar Frontier's CIS technology, which provides higher output than initially specified. All modules are RoHS compliant and cadmium- and lead-free. Fewer production steps and raw materials also mean an industry-leading energy payback time of less than one year. SF130–150 modules are shipped in cardboard-free packaging and use recyclable corner pieces.

Product & Technology Highlights

- Highest efficiency mass-production thin-film module, up to 12.2%
- World record 16.3% achieved in laboratory (30 cm x 30 cm module)
- Up to 10% extra kWh/kWp vs crystalline modules
- Light soaking effect boosts output after installation
- 77 MW delivered worldwide since 2007
- Based on proprietary R&D since 1978
- Cadmium and lead free
- Energy Payback Time under one year

I-V Curve



STC Characteristics

		SF130-L	SF140-L	SF145-L	SF150-L
Maximum power	P _{max}	130 W	140 W	145 W	150 W
Tolerance of P _{max}		+10%/-5%			
Factory binning		-25 W/+75 W	±2.5 W	±2.5 W	±2.5 W
Open circuit voltage	V _{oc}	106.0 V	109.0 V	110.0 V	110.0 V
Short circuit current	I _{sc}	2.10 A	2.10 A	2.10 A	2.10 A
Voltage at maximum power	V _{mpp}	74.0 V	77.0 V	78.0 V	79.0 V
Current at maximum power	I _{mpp}	1.77 A	1.82 A	1.86 A	1.90 A

Standard Test Conditions (STC): 1,000 W/m² irradiance, module temperature 25 °C, air mass 1.5. I_{sc} and V_{oc} are ±10% tolerance of STC rated values. Module output may rise after light soaking due to its unique characteristics.

Certificates and Compliance*

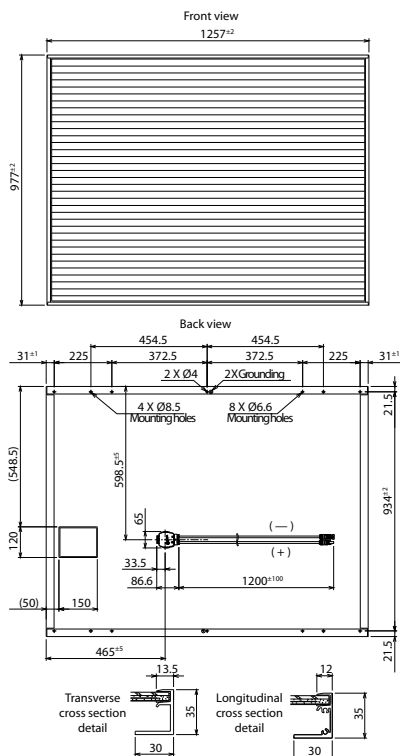


RoHS
compliant

IEC
61646
61730
certified

* IEC/TUV certifications for SF145 and SF150 modules are pending. UL certification for all modules is pending.

Module Drawing



NOCT Characteristics

		SF130-L	SF140-L	SF145-L	SF150-L
Maximum power	P _{max}	94.7 W	102 W	106 W	109 W
Open circuit voltage	V _{oc}	95.1 V	97.8 V	98.7 V	98.7 V
Short circuit current	I _{sc}	1.66 A	1.66 A	1.66 A	1.66 A
Voltage at maximum power	V _{mpp}	69.8 V	72.7 V	73.6 V	74.5 W
Current at maximum power	I _{mpp}	1.37 A	1.41 A	1.44 A	1.47 A

Nominal Operating Cell Temperature Conditions: Module operating temperature at 800 W/m² irradiance, air temperature 20 °C, wind speed 1 m/s and open circuit condition.

Performance at Low Irradiance

Efficiency reduction of maximum power from an irradiance of 1,000 W/m² to 200 W/m² at 25 °C is typically 3.0%. The standard deviation for the reduction of efficiency is 2.6%.

Temperature Characteristics

NOCT		47 °C
Temperature coefficient of I _{sc}	α	+0.01%/K
Temperature coefficient of V _{oc}	β	-0.30%/K
Temperature coefficient of P _{max}	δ	-0.31%/K

Mechanical Characteristics

Dimensions (L x W x H)	1,257 x 977 x 35 mm (49.5 x 38.5 x 1.4 in.)
Weight	20 kg (44.1 lbs)
Application class (IEC 61730)	A
Fire rating (IEC 61730)	Class C
Safety class (IEC 61140)	II
Snow/wind load*	2,400 Pa (IEC 61646) / 1,600 Pa design load (UL 1703)
Cell type	CIS glass substrate (cadmium free)
Front cover	Clear tempered glass, 3.2 mm
Encapsulant	EVA
Back sheet	Weatherproof plastic film (color: black & silver)
Frame	Anodized aluminum alloy (color: black)
Edge sealant	Butyl rubber
Junction box	Protection rating: IP 67 (with bypass diode)
Adhesive	Silicone
Output cables (conductor)	2.5 mm ² /14 AWG (halogen free)
Cable lengths (symmetrical)	1,200 mm (47.2 in.)
Connectors	MC 4 compatible
Packing information	25 panels/pallet • 36 pallets/40' container (900 panels)

* UL: 1.5 x design load is applied to the module, i.e. 2,400 Pa (50.1 lbs/ft²) is applied to meet the 1,600 Pa UL design load standard.

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