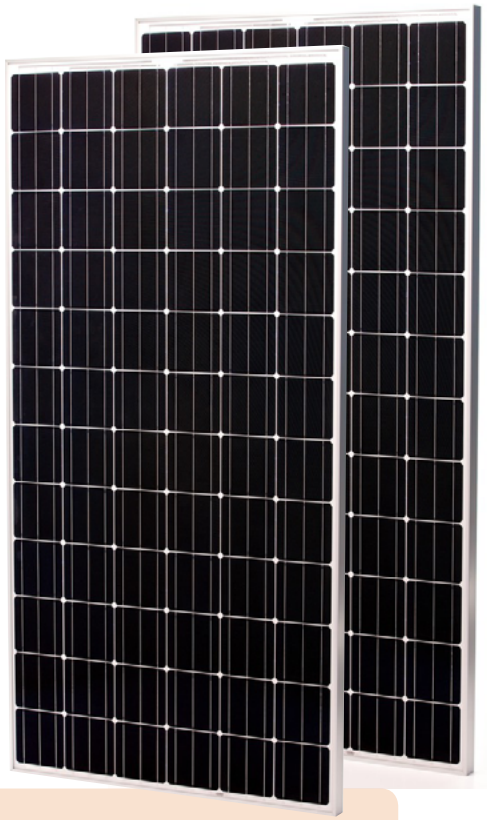
SILVANTIS® F-SERIES: 310 W TO 335 W

72-Cell High Wattage Modules

SunEdison introduces the next generation of high performance solar modules based on innovative Continuous Cz (CCz) monocrystalline cells and industry leading PID-free technology. Best-in-class efficiency coupled with durability and superior design elements provide products with maximum long-term investment performance. At the same time the F-series minimizes cost incurred throughout the products lifecycle, such as installation expense and overall operation and maintenance.

SunEdison is a leader in utility-scale solar systems with over two and a half-million Silvantis modules deployed in some of the world's harshest climates and most remote locations. This experience, coupled with over 50 years of expertise in silicon technology and innovation enables SunEdison to design and produce highly advanced solar solutions.



SILVANTIS ADVANTAGE

- 17.1% module efficiency with positive power tolerance
- PID-free: multi-MPPT transformerless inverter compatible
- Tariff-free: not subject to U.S. countervailing or antidumping tariffs
- Based on SunEdison's proprietary CCz technology
- Higher return on investment with more watts-per-module

QUALITY & SAFETY

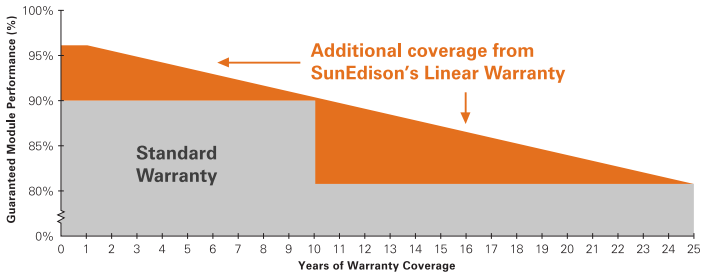
- Industry leading PID test conditions:
  - » 96 hours, 85 C, 85% relative humidity, –1 kV
- IEC certified by TÜV SÜD:
  - » 61215 long-term operation in a variety of climates including snow loading up to 5400 Pa and hail testing
  - » 61730 to ensure electrical safety
  - » 60068-2-68 dust and sand testing for desert climates
  - » 61701 salt mist corrosion resistant Level 1 for marine regions, Level 6 for desert regions
  - » 62716 ammonia testing for agricultural environments
- Manufactured to AQL 0.4 Level II quality and tested up to 3x beyond IEC standards
- CSA certified to UL 1703 for 1,000 V systems in the US and Canada
- MCS certified by BABT for the UK

ROBUST DESIGN

- Reliability tested beyond international standards
- Proven field performance in harsh environments

SUNEDISON WARRANTY

- 10-year limited warranty for materials and workmanship
- 25-year linear power warranty at STC:
  - » Year 1: ≤ 3.5% of rated power
  - » After year 1: ≤ 0.7% rated power degradation per year



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PHYSICAL PARAMETERS

Module Dimensions	1,976 mm x 990 mm x 50 mm
Module Weight	22 kg
Cell Type	CCz monocrystalline
Number of Cells	72
Frame Material	Anodized aluminum alloy
Tempered ARC Glass Thickness	3.2 mm
Connector Types (indicated in model #)	Amphenol H4 (–39); Bizlink S418 (–34, –35)

TEMPERATURE COEFFICIENTS AND PARAMETERS[1]

Nominal Operating Cell Temperature (NOCT)	45 C ± 2 C
Temperature Coefficient of Pmax	–0.43 %/C
Temperature Coefficient of Voc	–0.31 %/C
Temperature Coefficient of Isc	+0.05 %/C
Operating Temperature	–40 C to +85 C
Maximum System Voltage	1000 V (UL & IEC)
Limiting Reverse Current	9.30 A
Maximum Series Fuse Rating	15 A
Pmax Production Tolerance	0 W to +5 W
Junction Box Rating	IP67
Application Class	Class A (IEC)
Module Fire Performance	Type 1 or Type 2 available[2]
Fire Resistance Rating	Class C
Packaging Specifications	20 modules per pallet 440 modules per 40' high-cube container
Wind and Snow Front Load	Up to 5,400 Pa
Wind Back Load	2,400 Pa
Reduction of STC efficiency from 1000 W/m² to 200 W/m² (Relative)	< 4%

STC ELECTRICAL CHARACTERISTICS[3]

Model #[4]	F310BzD	F315BzD	F320BzD	F325BzD	F330BzD	F335BzD
Rated Maximum Power Pmax (W)	310	315	320	325	330	335
Open-Circuit Voltage Voc (V)	45.3	45.7	45.9	46.0	46.2	46.4
Short Circuit Current Isc (A)	9.16	9.23	9.26	9.27	9.28	9.29
Module Efficiency (%)	15.8	16.1	16.4	16.7	16.9	17.1
Maximum Power Point Voltage Vmpp (V)	36.2	36.6	37.0	37.3	37.7	37.9
Maximum Power Point Current Impp (A)	8.57	8.63	8.68	8.72	8.77	8.85

NOCT ELECTRICAL CHARACTERISTICS[5]

Model #[4]	F310BzD	F315BzD	F320BzD	F325BzD	F330BzD	F335BzD
Rated Maximum Power Pmax (W)	225.1	228.7	232.4	236.0	239.6	243.3
Open-Circuit Voltage Voc (V)	41.3	41.4	41.5	41.6	41.7	41.8
Short-Circuit Current Isc (A)	7.43	7.55	7.67	7.79	7.91	8.03
Maximum Power Point Voltage Vmpp (V)	32.3	32.6	32.9	33.2	33.5	33.7
Maximum Power Point Current Impp (A)	6.96	7.01	7.06	7.11	7.16	7.21

Listed specifications are subject to change without prior notice.

[1] *Temperature coefficients may vary by ±10%*

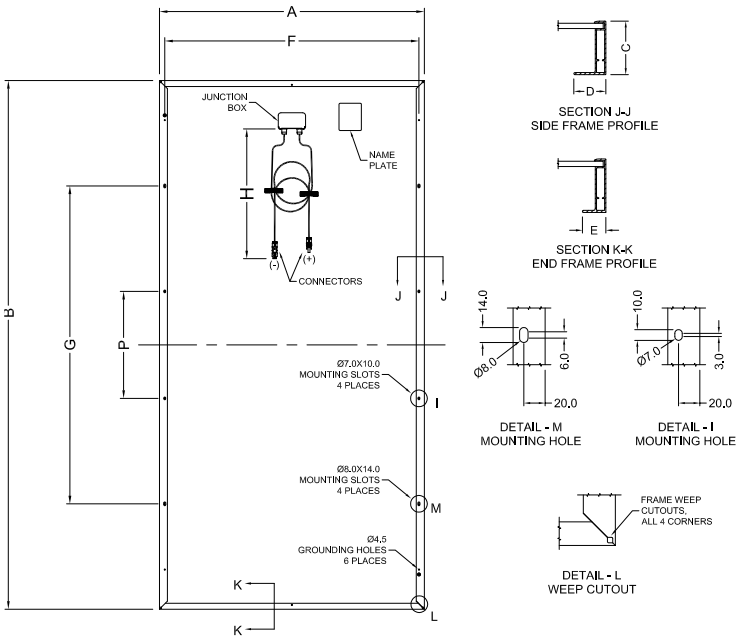
[2] *Refer to design package and module label for specific Fire Performance Type*

[3] *All electrical data at standard test conditions (STC): 1000 W/m², AM 1.5, 25 C; electrical characteristics may vary by ±5% and power measurement tolerance by ±3%*

[4] *z indicates manufacturing location: M = Malaysia, X = Mexico, K = Korea*

[5] *Electrical characteristics measured under normal operating conditions of cells: 800/m², 20 C ambient temperature, AM 1.5, wind speed 1 m/s*

F-SERIES SOLAR MODULE DIMENSIONS mm [inch]

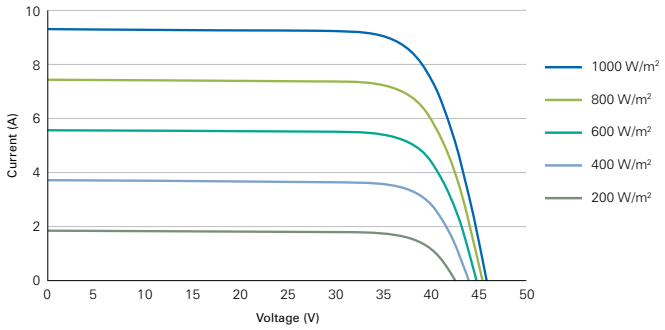


Module Dimensions
A – 990 [39.0] B – 1,976 [77.8] C – 50 [2.0] D – 30 [1.2] E – 22 [0.9]

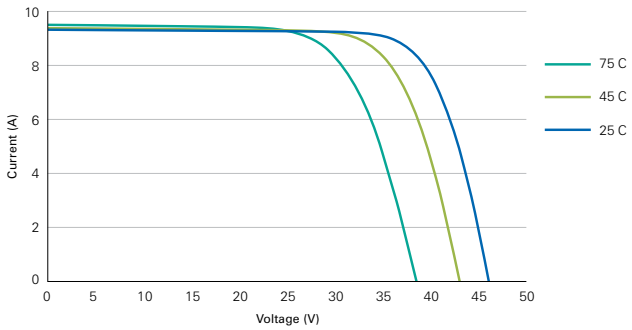
Mounting Hole Spacing
F – 950 [37.4] G – 1,188 [46.8] P – 400 [15.7]

Cable Length (indicated in model #)
H – 1,000 [39.4] (model –34) H – 1,300 [51.2] (model –35, –39)

IV CURVES AT MULTIPLE IRRADIANCES [25 C]



IV CURVES AT MULTIPLE TEMPERATURES [1000 W/m²]



For more information about SunEdison's Silvantis modules, please visit www.sunedison.com

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