

CoolPV™ Benefits

Solar PV Module



Improved PV Electrical Output with Energy to Heat Your Pool



Unique Design Provides Unmatched Performance



Maximum Energy Output From Available Roof Space

Back Support



Solar Thermal Collector

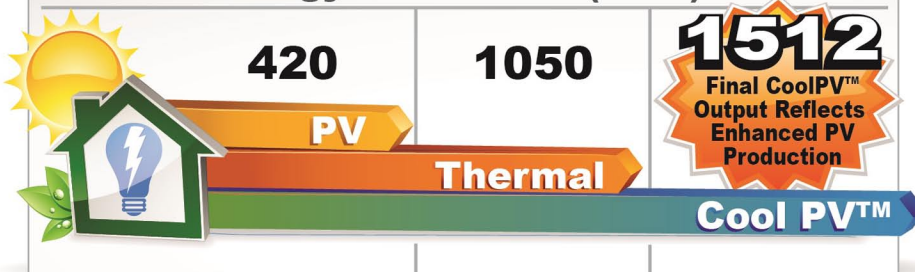


FAFCO®



FAFCO® and SolarWorld® combine their industry leading technology to produce the world's best performing solar product.

Annual Energy Production (Kwh)



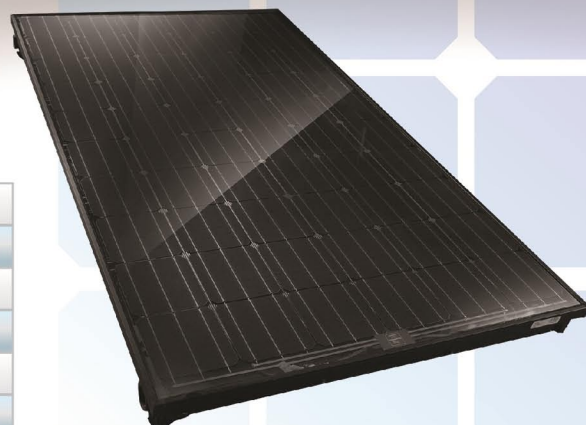
By **FAFCO®**

www.CoolPVSolar.com

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PV Specifications

Maximum Power (P _{MAX})	280 WP
Rated Voltage (V _{MPP})	31 V
Rated Current (I _{MPP})	8.94 A
Open Circuit Voltage (V _{OC})	39.4 V
Short Circuit Current (I _{SC})	9.58 A
Temperature Coefficient (P _{MAX})	-0.41% / °C
Cells, Number/Type	60 / Monocrystalline



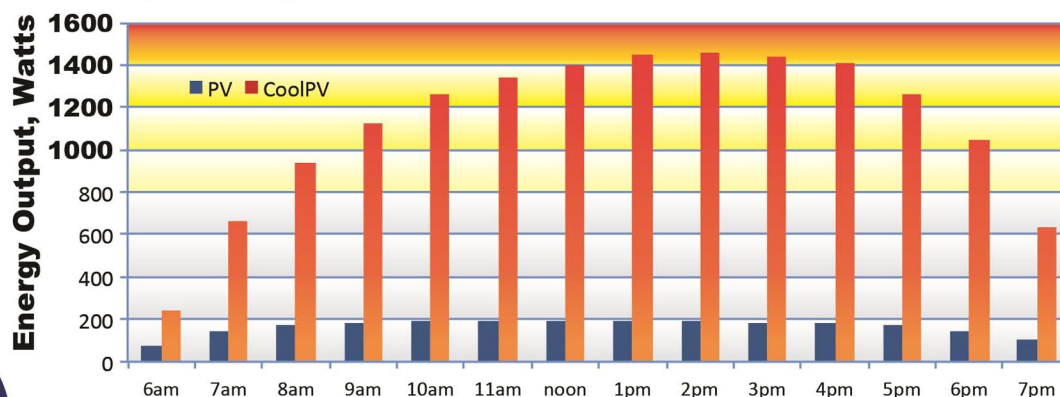
Thermal Specifications

Heat Output	1 kW	3400 btu/hr
Operating Pressure	-35/+35 kPa	-5/+5 psi
Test Pressure	345 kPa	50 psi
Flow Rate (Typical)	3.8 lpm	1 gpm

Mechanical Specifications

Panel Dimensions	1.00 x 1.68 m	39.4 x 66.1 in
Panel Area	1.68 m ²	18.1 ft ²
Roof Load (filled)	17.4 kg/m ²	3.6 psf
Fluid Capacity	4.9 l	1.3 gal
Fluid Connection Type	FAFCO Proprietary	
Electrical Connection Type	MC4	

CoolPV Example Day



Sunmodule® Protect

SW 275-280 MONO BLACK (33mm frame)



TUV Power controlled:
Lowest measuring tolerance in industry



Every component is tested to meet
3 times IEC requirements



Designed to withstand heavy
accumulations of snow and ice



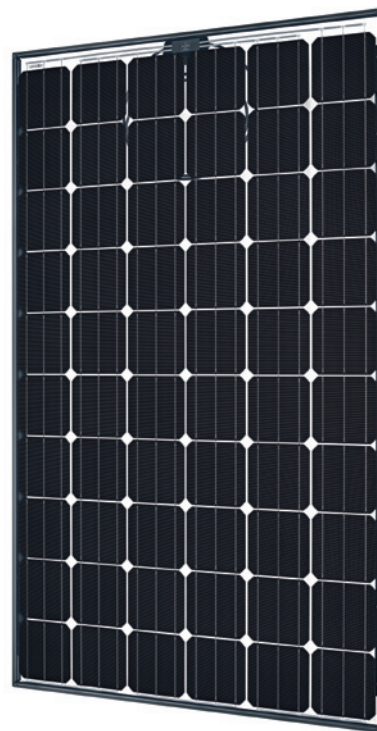
Sunmodule Protect:
Positive performance tolerance



30-year linear performance warranty
and 10-year product warranty



Glass with anti-reflective coating



World-class quality

Fully-automated production lines and seamless monitoring of the process and material ensure the quality that the company sets as its benchmark for its sites worldwide.

Innovative glass technologies make extremely weather-resistant and robust solar modules possible. The Sunmodule Protect offers higher mechanical resilience and a longer service life, and still weighs the same as the Sunmodule Plus.

The positive power tolerance guarantees utmost system efficiency. Only modules achieving or exceeding the designated nominal power in performance tests are dispatched. The power tolerance ranges between -0 Wp and +5 Wp.

SolarWorld is setting new standards with the ground-breaking 30-year linear performance guarantee: a maximum degradation of just 0.35% p.a. provides guaranteed module performance of 90% after 21 years, and 86.85% after 30 years.*



- Qualified, IEC 61215
- Safety tested, IEC 61730
- Blowing sand resistance, IEC 60068-2-68
- Ammonia resistance, IEC 62716
- Salt mist corrosion, IEC 61701
- Periodic inspection

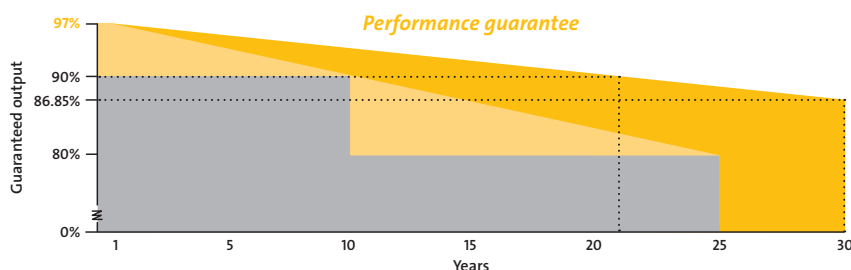


- Periodic inspection
- Power controlled



30-year linear performance guarantee

- Linear performance guarantee for SolarWorld Sunmodule Protect
- Linear performance guarantee for SolarWorld Sunmodule Plus
- Competitor's tiered performance guarantee



*in accordance with the applicable SolarWorld Limited Warranty at purchase.
www.solarworld.com/warranty

solarworld.com



Sunmodule® Protect

SW 275-280 MONO BLACK (33mm frame)



PERFORMANCE UNDER STANDARD TEST CONDITIONS (STC)*

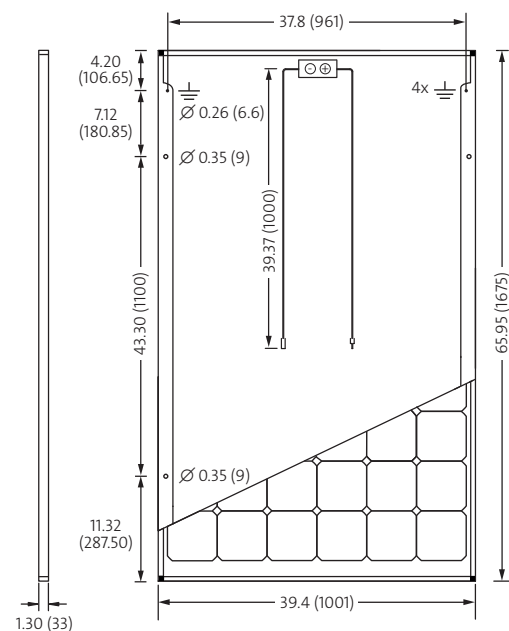
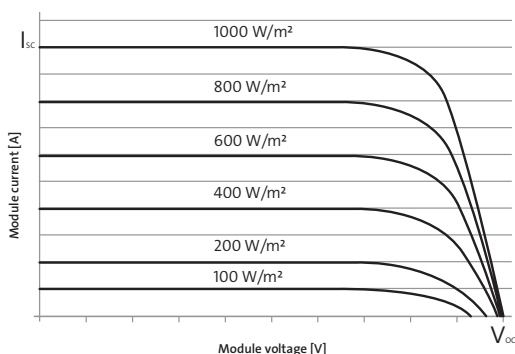
		SW 275	SW 280
Maximum power	P_{max}	275 Wp	280 Wp
Open circuit voltage	V_{oc}	39.4 V	39.5 V
Maximum power point voltage	V_{mpp}	31.0 V	31.2 V
Short circuit current	I_{sc}	9.58 A	9.71 A
Maximum power point current	I_{mpp}	8.94 A	9.07 A
Module efficiency	η_m	16.40 %	16.70 %

*STC: 1000W/m², 25°C, AM 1.5

PERFORMANCE AT 800 W/M², NOCT, AM 1.5

		SW 275	SW 280
Maximum power	P_{max}	203.1 Wp	207.2 Wp
Open circuit voltage	V_{oc}	35.7 V	35.8 V
Maximum power point voltage	V_{mpp}	28.1 V	28.3 V
Short circuit current	I_{sc}	7.75 A	7.85 A
Maximum power point current	I_{mpp}	7.22 A	7.33 A

Minor reduction in efficiency under partial load conditions at 25° C: at 200 W/m², 100% of the STC efficiency (1000 W/m²) is achieved.



All units provided are imperial. SI units provided in parentheses.
SolarWorld AG reserves the right to make specification changes without notice.

COMPONENT MATERIALS

Cells per module	60	Front	Heat treated glass (EN 61215)
Cell type	Mono crystalline	Frame	Black anodized aluminum
Cell dimensions	6.17 in x 6.17 in (156.75 x 156.75 mm)	Weight	47.4 lbs (21.5 kg)

THERMAL CHARACTERISTICS

NOCT	48°C
TCI_{sc}	0.044 %/K
TCV_{oc}	-0.31 %/K
$TC P_{mpp}$	-0.43 %/K
Operating temp	-40° C to +85° C

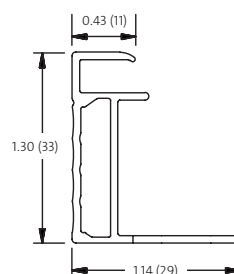
ADDITIONAL DATA

Power sorting	-0 Wp/+5 Wp
J-Box	IP65
Connector	PV wire per UL4703 with H4 connectors
Module fire performance	(UL 1703) Type 3

PARAMETERS FOR OPTIMAL SYSTEM INTEGRATION

<i>Maximum system voltage SC II / NEC</i>		1000 V
<i>Maximum reverse current</i>		25 A
<i>Number of bypass diodes</i>		3
<i>Design loads*</i>	<i>Two rail system</i>	113 psf downward, 64 psf upward
<i>Design loads*</i>	<i>Three rail system</i>	178 psf downward, 64 psf upward
<i>Design loads*</i>	<i>Edge mounting</i>	178 psf downward, 41 psf upward

* Please refer to the Sunmodule installation instructions for the details associated with these load cases.



- Compatible with both "Top-Down" and "Bottom" mounting methods
- Grounding Locations:
 - 4 locations along the length of the module in the extended flange.

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SunSaver™

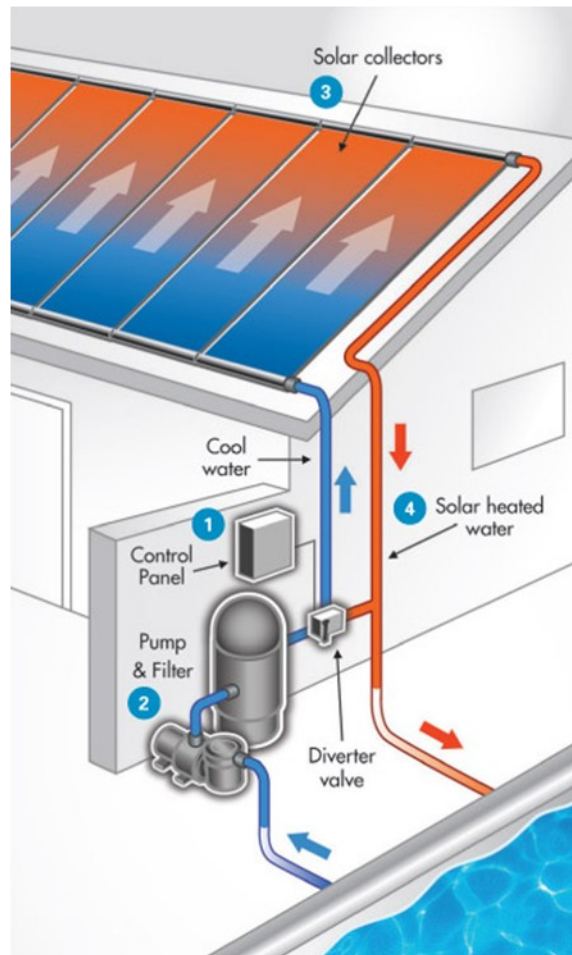
Solar Pool Heating System



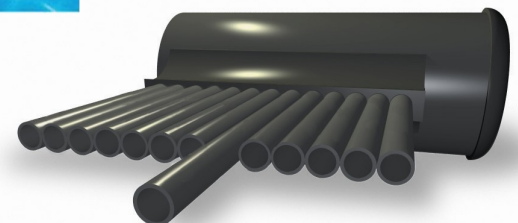
- Industry best warranty
- Revolutionary technology mixes the water in a spiral motion
- Water evenly and efficiently moves through the header
- More tubes than competitor panels
- Dramatically reduces or eliminates pool heating costs
- Adds value to your pool and to your home
- Heats your pool to a warm, comfortable temperature with environment friendly energy, free from the sun

How It Works

FAFCO's 40 years of innovation and patented technology have made it easy to heat your pool with solar energy. Cold water is pumped from your pool through our patented solar collector design. Like a garden hose lying in the sun, the collector heats the water inside, which is then pumped back into your pool giving you luxuriously warm water and a significantly longer swim season.



1. Set your desired water temperature and a sensor determines the most efficient run time.
2. Your pool pump sends cold water from the pool through the solar collectors
3. FAFCO's polymer solar collectors heat the water as it is channeled through the collector array
4. Luxuriously warm, solar heated water flows back into your pool



SunSaver™

Solar Pool Heating System

DESCRIPTION:	The SunSaver™ Solar Collector is manufactured in Chico, California. The collector is a specially developed, highly stabilized polyolefin and is of parallel, circular channel design. It is unglazed, un-insulated, and designed for low temperature applications such as swimming pool heating, heat pumps, aquaculture, and hydroponics.		
DIMENSIONS:	Header Length = 50.875 in. (1.29 m) Width (Panel body) = 47.5 in. (1.21 m)		
	<u>Overall Dimensions</u>	<u>Effective Area</u>	
	4 ft. X 8 ft. (1.22 X 2.44 m)	31.6 ft ² (2.94 m ²)	
	4 ft. X 10 ft. (1.22 X 3.05 m)	39.5 ft ² (3.67 m ²)	
	4 ft. X 12 ft. (1.22 X 3.66 m)	47.8 ft ² (4.40 m ²)	
ROOF MOUNTING SPACE:	Width = [Number of panels X 50.875 in. (129 cm)] + 24 in. (61 cm) Length = Panel length + 24 in. (61 cm)		
RACK SPACE:	Width = [Number of panels X 50.875 in. (129 cm)]+ 2 in. (5 cm) Length = Panel length + 6 in. (15 cm)		
FLOW:	Maximum recommended flow = 8 gpm per panel 3.47 psi head loss (1,817 l/hr, 0.244 kg/cm ²) Minimum recommended flow = 2 gpm per panel 0.23 psi head loss (454 l/hr, 0.016 kg/cm ²) Recommended flow = 4 gpm per panel 0.87 psi head loss (908 l/hr, 0.061 kg/cm ²)		
TEMPERATURE:	Normal operating temperature = 60°F to 90°F (16°C to 32°C) Maximum continuous operating temperature = 212°F (100°C) Maximum intermittent temperature (un-pressured) = 250°F (121°C) Melt temperature = 338°F (170°C)		
CHEMICAL RESISTANCE:	Compatible with common collector fluids		
CORROSION:	Non-corrosive		
FREEZING:	The system should be drained before freezing conditions occur.		
WEATHERABILITY:	Weatherometer, accelerated outdoor exposure, and other extensive laboratory testing demonstrates long-term weatherability of SunSaver™ collectors (see warranty). Additionally, FAFCO's experience of 30+ years and over 1,000,000 collectors installed confirms that the proprietary stabilization and high mechanical strength results in negligible warranty over the TWELVE-YEAR warranty period.		
WEIGHT:	Without Water: 4 ft. X 8 ft. 13.5 lbs (5.04 kg) or 0.42 lbs/ft ² (2.05 kg/m ²) 4 ft. X 10 ft. 15.9 lbs (5.93 kg) or 0.40 lbs/ft ² (1.95 kg/m ²) 4 ft. X 12 ft. 18.3 lbs (6.83 kg) or 0.38 lbs/ft ² (1.86 kg/m ²) With Water: 4 ft. X 8 ft. 51.1 lbs (19.1 kg) or 1.60 lbs/ft ² (7.81 kg/m ²) 4 ft. X 10 ft. 59.8 lbs (22.3 kg) or 1.50 lbs/ft ² (7.32 kg/m ²) 4 ft. X 12 ft. 68.5 lbs (25.6 kg) or 1.43 lbs/ft ² (6.98 kg/m ²)		
ABSORPTIVITY:	0.96		
EMISSIONIVITY:	0.90		
TIME CONSTANT:	64 seconds		
TESTED OUTPUT:	1,014 BTU/ft ² (Florida Solar Energy Center)		

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