

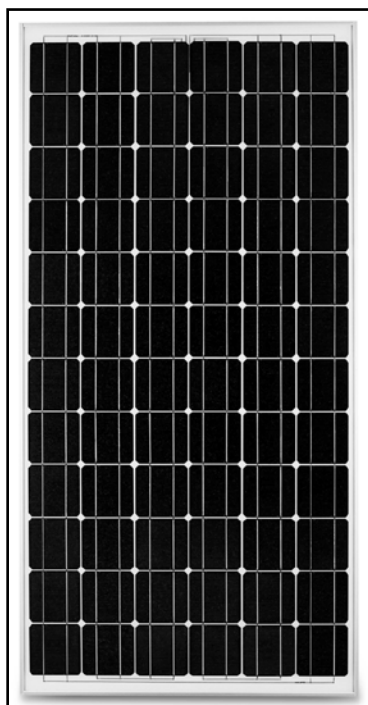
14 - SHELL PV MODULES

Shell Solar PowerMax-Ultra PV Modules

The Shell PowerMax Ultra™ solar cells are based on several exciting and patented developments in technology. A silicon nitride anti-reflection coating traps more light than coatings previously used resulting in 10% higher cell efficiency. Shell modules are designed for both on and off grid applications. A torsion and corrosion resistant frame insures dependable performance, even under high snow and wind loads.

Shell Solar has 30 years' experience in mono-crystalline technology backed by its patented PowerMax® efficiency-enhancing technology. Shell Solar Industries, formerly Siemens Solar, and before that Arco Solar, was one of the first large-scale US manufacturers of photovoltaic modules. After the sale of Shell Solar's crystalline operations to Solar World from Germany, we expect these modules to be re-branded. There will be no change in specifications.

Most Shell modules have a 20 amp series fuse rating which allows the use of two parallel strings of modules with one series fuse. Made in USA.



Ultra 165-PC / Ultra 175-PC Modules

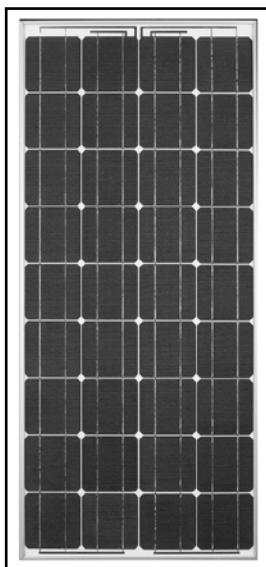
These are Shell's largest PV modules, designed for use in high-voltage grid-connected applications as well as in large industrial and off-grid applications for 24- or 48-volt battery charging. We recommend using these modules where arrays of more than 1 kw are specified. These modules use 72 Powermax Ultra™ 5" square single-crystalline cells in series behind tempered glass, with anodized aluminum frames and a conduit-ready junction box with bypass diodes and Multi-Contact® output cables. The Multi Contact® output cables are easily removed if conduit or other wiring method is desired. 25-year warranty. UL listed

Module		Ultra165-PC	Ultra175-PC
Peak Power	Watts	165	175
Peak power voltage	Volts	35	35.4
Peak power current	Amps	4.72	4.95
Open circuit voltage	Volts	44.5	44.6
Short circuit current	Amps	5.4	5.43
Max. system voltage	Volts	600	
Nominal voltage	Volts	24	
Series Fuse Rating		20A	
Length		63.9" (1622mm)	
Width		32.1" (814mm)	
Depth (including j-box)		2.2" (56mm)	
Weight		38 lbs	
Item Code		11.2272	11.2274
List Price		\$1095	\$1165

Ultra 80-P/ Ultra 85-P Modules

The Shell Solar SQ80-P and SQ85-P modules have 36 Powermax Ultra™ 5" square single-crystalline cells in series behind tempered glass, with anodized aluminum frames and a conduit-ready junction box with bypass diodes. These modules have a 12 volt nominal output and are the best choice for systems under 1 kW, as well as for solar direct applications such as to power DC fans and water pumps.

These modules are UL listed, have a 25-year warranty and are FM approved



Module		Ultra 80-P	Ultra 85-P
Peak Power	Watts	80	85
Peak power voltage	Volts	16.9	17.2
Peak power current	Amps	4.76	4.95
Open circuit voltage	Volts	21.8	22.2
Short circuit current	Amps	5.35	5.45
Max. system voltage	Volts	600	600
Nominal voltage	Volts	12	
Series Fuse Rating		20 Amp	
Length		47.2" (1200mm)	
Width		20.8" (527mm)	
Depth (including j-box)		1.3" (33mm)	
Weight		16.7 lbs	
Item Code		11.2247	11.2249
List Price		\$580	\$617

MITSUBISHI PV MODULES - 15

Mitsubishi Solar Modules

As a general manufacturer of electrical machinery and appliances, Mitsubishi Electric Corporation offers a legacy of innovation and achievement that goes all the way back to its founding in 1921.

Since 1976, when Japan launched its first commercial satellite, Mitsubishi participated in approximately 250 related projects around the world. One such project has led to the development of a number of photovoltaic power generation systems that have proven extremely reliable, even in the harsh conditions of outer space.

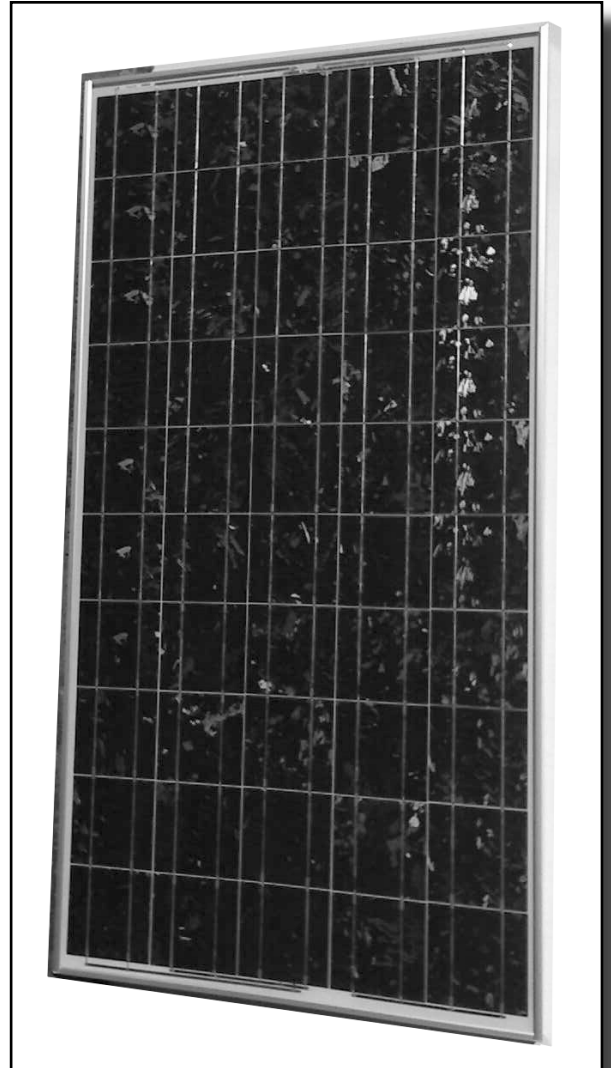
Lead-Free Modules

Mitsubishi has applied leading-edge technologies from its space-related applications to terrestrial systems to create high-performance photovoltaic power-generation systems that offer an astonishing range of applications. Mitsubishi Electric has successfully produced the first cells in Japan that do not require solder coatings, a milestone in the development of environmentally friendly composite materials and manufacturing processes for the silver electrodes used on the surfaces of crystalline silicon photovoltaic cells. Their photovoltaic modules are now made using lead-free solder, completely eliminating lead from the manufacturing process.

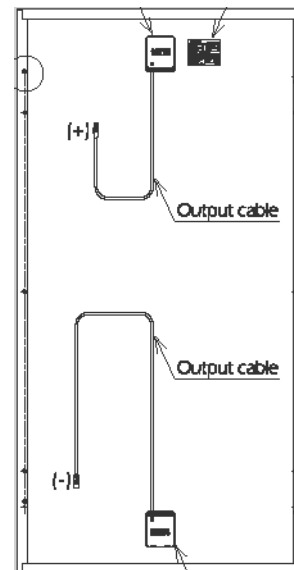
Mitsubishi even achieved higher PV module conversion efficiency, taking advantage of the new product's ability to more uniformly reflect the sun's rays.

PV-MF170EB3 Modules

This module is designed for use in high-voltage grid-connected applications, but can be used in large industrial and off-grid applications for battery charging if the system includes an appropriate MPPT charge control such as the Outback MX-60 or BlueSky Solar Boost. These modules use 50 square poly-crystalline 155 mm cells in series behind tempered glass, with anodized aluminum frames and Multi-Contact® output cables. Positive and negative cables come from junction boxes at opposite ends of the module (see diagram below). Made in Japan. UL listed. 25 year power output warranty.



Module		PV-MF170EB3
Peak Power	Watts	170
Peak power voltage	Volts	24.6
Peak power current	Amps	6.93
Open circuit voltage	Volts	30.6
Short circuit current	Amps	7.38
Max. system voltage	Volts	780
Series Fuse Rating		15 A
Length		62.2" (1580 mm)
Width		31.5" (800 mm)
Depth (including j-box)		1.8" (46mm)
Weight		34.2 lbs
Item Code		11.8857
List Price		\$1095

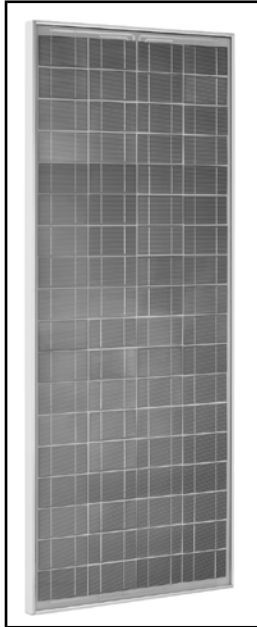


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16 - EVERGREEN SOLAR MODULES

Evergreen EC-100 Cedar Modules

PV modules produced by Evergreen Solar are distinctive in their appearance because they incorporate proprietary crystalline silicon technology known as String Ribbon. In the String Ribbon technique, two high temperature strings are pulled vertically through a shallow silicon melt, and the molten silicon spans and freezes between the strings. The process is continuous: long string interrupting growth. This advantage in material efficiency means String Ribbon yields over twice as many solar cells per pound of silicon as conventional methods. Additionally, the resulting distinctive shape of the solar cell allows for a high packing density. EC-100 series modules are nominal 12 volt for battery charging or grid-tie systems. They have Multi Contact cables. Evergreen modules are UL listed and have a 25 year power output warranty. Made in USA.



Module		EC-102-GL	EC-110-GL	EC-115-GL	EC-120-GL
Number of cells		72	72	72	72
Peak Power	Watts	102	110	115	120
Peak power voltage	Volts	16.8	17.0	17.1	17.6
Peak power current	Amps	6.07	6.47	6.73	6.82
Open circuit voltage	Volts	21.3	21.3	21.3	21.5
Short circuit current	Amps	7.28	7.48	7.62	7.68
Max. system voltage	Volts	UL Rating 600 / TUV (Europe) 800			
Series fuse rating		15 Amps			
Length	inch (mm)	62.5 (1585)			
Width	inch (mm)	25.7" (653 mm)			
Depth (including j-box)	inch (mm)	1.38" (35mm)			
Weight (lbs)	lbs.	28			
Item Code		11.5331	11.5332	11.5334	11.5345
Price		\$652	\$725	\$758	\$790

Evergreen Spruce Modules

This new higher power series of modules from Evergreen is optimized for grid-tie systems. The modules use the same cells as the Cedar line above but have an additional 36 cells. They can be used for battery charging with an MPPT charge control such as the Outback MX-60 or the BlueSky series of charge controls. Use up to 3 modules in series with the MX-60 charge control. Made in USA or Germany. They have Multi Contact cables. Evergreen modules are UL listed and have a 25 year power output warranty. Made in USA. This modules will be available beginning Summer 2006.



Module		EC-170	EC-180	EC-190
Number of cells		108	108	108
Peak Power	Watts	170	180	190
Peak power voltage	Volts	25.3	25.9	26.3
Peak power current	Amps	6.72	6.95	7.04
Open circuit voltage	Volts	32.4	32.6	32.7
Short circuit current	Amps	7.55	7.78	7.92
Max. system voltage	Volts	600	600	600
Series fuse rating		15 Amps		
Length	inch (mm)	61.83 (1570)		
Width	inch (mm)	37.45" (951mm)		
Depth (including j-box)	inch (mm)	1.6" (41mm)		
Weight (lbs)	lbs.	52		
Item Code		11.5346	11.5349	11.5350
Price		\$1,140	\$1,205	\$1,275

KYOCERA & GE SOLAR MODULES - 17

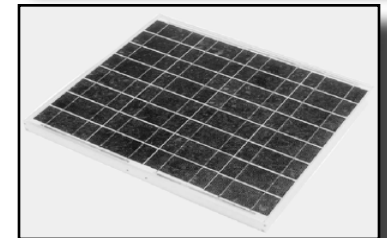
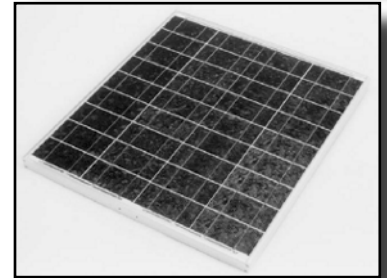
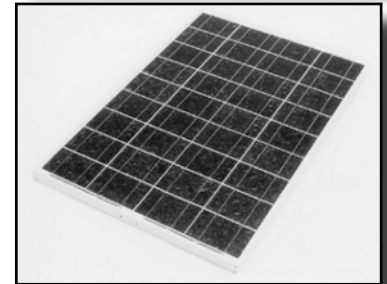
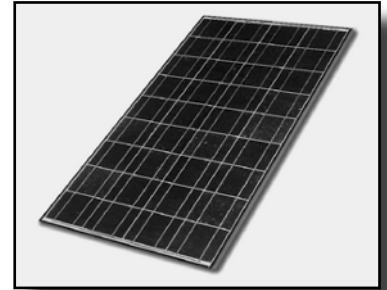
Kyocera Battery Charging Modules

Kyocera began researching photovoltaics in 1975 and has installed thousands of systems throughout the world since 1978. These systems are ideal for charging storage batteries to power remote homes, recreational vehicles, telecommunications systems and other consumer and commercial applications.

Kyocera's advanced cell-processing technology and automated production facilities produce highly efficient multi-crystal photovoltaic modules. To protect the cells from the most severe environmental conditions, they are encapsulated between a tempered glass cover and an EVA pottant with a PVF back sheet. The entire laminate is installed in an anodized aluminum frame for structural strength and ease of installation.

Kyocera T-series modules have an industrial-grade junction box that allows the use of nominal 1/2" conduit fittings. They are available as 130 watt, 85 watt, 65 watt and 50 watt modules for 12 volt battery charging.

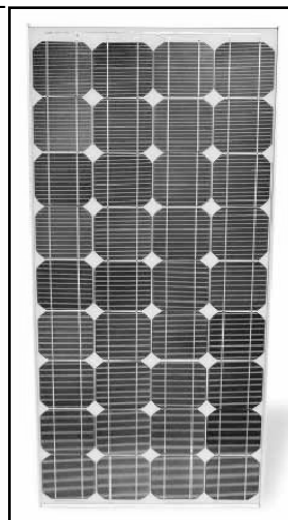
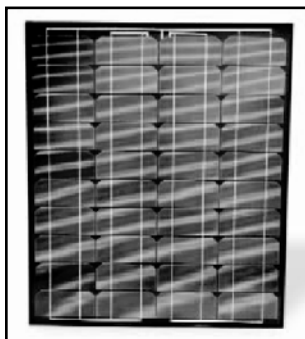
All Kyocera modules feature extremely sturdy frames, tempered, low-reflection glass covers, built-in bypass diodes and a 25-year power output warranty. UL listed. Made in Japan or Mexico.



Kyocera Module		KC50T	KC65T	KC85T	KC130MT
Number of cells		36	36	36	36
Peak Power	Watts	50	65	85	130
Peak power voltage	Volts	17.4	17.4	17.4	17.6
Peak power current	Amps	3.11	3.75	5.02	7.39
Open circuit voltage	Volts	21.7	21.7	21.7	21.9
Short circuit current	Amps	3.31	3.99	5.34	8.02
Max. system voltage	Volts	600	600	600	600
Nominal voltage	Volts	12	12	12	12
Length		25.2" (639 mm)	29.6" (751 mm)	39.6" (1007 mm)	56.1" (1425 mm)
Width		25.7" (652 mm)	25.7" (652 mm)	25.7" (652 mm)	25.7" (652 mm)
Depth (including j-box)		2.125" (54 mm)	2.125" (54 mm)	2.125" (54 mm)	2.125" (54 mm)
Weight (lbs)		11	13.2	18.3	26.8
Item Code		11.7719	11.7722	11.7725	11.7733
Price		\$360	\$420	\$540	\$790

GE-50 50 Watt and GE-72 72 Watt Module

GE 50 watt and 72 watt modules are made with mono-crystalline cells. These aluminum framed modules are ideal for off-grid applications because they have junction boxes that accommodate conduit fittings. UL Listed. Made in China.



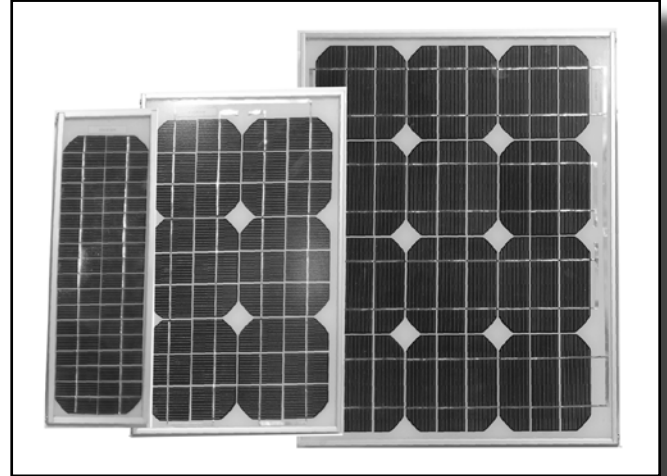
Module		GEPV-50	GEPV-72
Number of cells		40	36
Peak Power	Watts	50	72
Peak power voltage	Volts	17.3	17.0
Peak power current	Amps	2.9	4.4
Open circuit voltage	Volts	22	21
Short circuit current	Amps	3.3	4.8
Max. system voltage	Volts	600	600
Series Fuse Rating		5 A	10 A
Length		33.8" (858 mm)	47.3" (1201 mm)
Width		26.0" (661 mm)	20.8" (527 mm)
Depth		2.1" (54 mm)	2.1" (54 mm)
Weight (lbs)		16.6	18.1
Item Code		11.6254	11.6256
List Price		\$360	\$530

18 - AEE PV MODULES

G-Series Battery Charging Modules

These modules are glass laminated in aluminum frames with junction boxes on the back. They are made for us, to our exacting specifications to assure high quality and long life.

AE G-Series photovoltaic modules provide cost-effective photovoltaic power for DC loads with moderate energy requirements. With 36 single crystal cells in series, they charge batteries efficiently in virtually any climate (AE-5/6G has 18 cells in series for 6 volt charging applications). All three sizes are laminated behind tempered glass with aluminum frames. A small junction box on the back allows easy connection of power leads. Typical commercial applications of these modules include remote telemetry, instrumentation systems, security sensors, signals, and land-based navigation aids. These modules have a 10 year power output warranty. Made in India. Not UL listed.



Module		AE-37G	AE-20G	AE-10G	AE-5G	AE-5/6G
Peak Power	Watts	37	20	10	5	5
Peak power voltage	Volts	16.4	16.4	16.4	16.4	8.2
Peak power current	Amps	2.25	1.22	0.61	0.31	0.61
Nominal voltage	Volts	12	12	12	12	6
Length	Inches	24.8	21.3	17.4	16.8	16.8
Width	Inches	21.2	17.7	11.4	6.1	6.1
Item Code		1.9027	11.9022	11.9020	11.9018	11.9014
Price		\$300	\$220	\$120	\$82	\$82



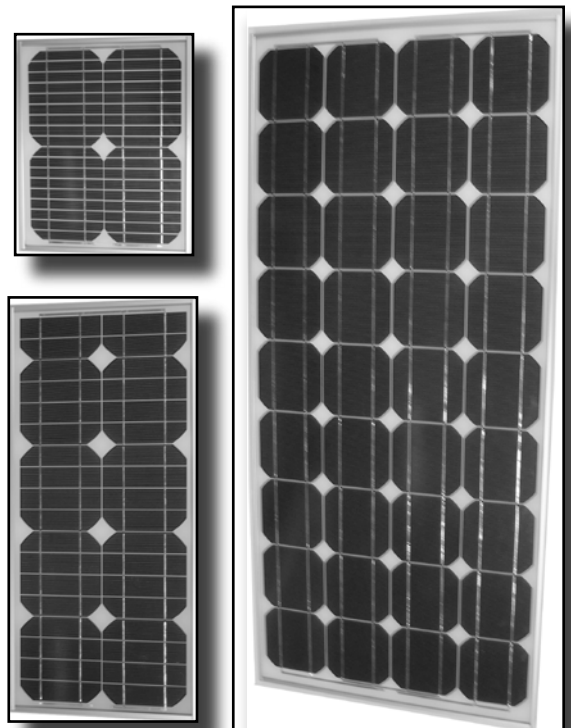
Medium and Small Modules

The AE series-J photovoltaic modules provide cost-effective photovoltaic power for DC loads with moderate energy requirements. With 36 cells in series, they charge batteries efficiently in virtually any climate. All three sizes are laminated behind tempered glass with aluminum frames.

The 50 and 80 watt modules have an industrial grade conduit-ready junction box on the back with knockouts for two standard 1/2" conduit fittings. The 10 and 20 watt modules have 6 foot, 18 AWG wire leads.

Typical commercial applications of these modules include remote telemetry, instrumentation systems, security sensors, signals, and land-based navigation aids. These modules have a 10 year power output warranty. Made in China. Not UL listed.

Module		AE-80J	AE-20J	AE-10J
Peak Power	Watts	80	20	10
Peak power voltage	Volts	18.0	17.3	17.3
Peak power current	Amps	4.5	1.2	0.58
Nominal voltage	Volts	12	12	12
Length	Inches	47.2 (1200 mm)	24.5 (621 mm)	13.8 (350 mm)
Width	Inches	20.9 (530 mm)	11.1 (282 mm)	11.1 (282 mm)
Depth	Inches	1.3 (33 mm)	1.3 (33 mm)	1.3 (33 mm)
Item Code		11.8235	11.8220	11.8210
Price		\$600	\$220	\$120

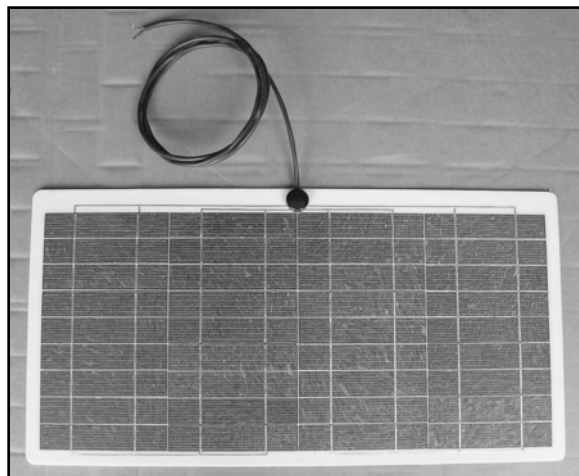


SMALL PV MODULES - 19

Lightweight Laminated Modules

We make these modules made for us. They are excellent for powering fans, pumps and for trickle charging batteries. These modules are made by laminating 36 solar cells between layers of EVA plastic with a Tedlar cover and a fiberglass-reinforced plastic back. They have a six foot cable attached to the front of the module on one end. Made in Mexico. Not UL listed. 2-year warranty.

Module		AE-20L	AE-10L	AE-5L
Peak Power	Watts	20	10	5
Peak power voltage	Volts	16.4	16.4	16.4
Peak power current	Amps	1.22	0.61	0.31
Nominal voltage	Volts	12	12	12
Length	Inches	25	13	13
Width	Inches	13	13	7
Depth (with j-box)	Inches	0.5	0.5	0.5
Manufactured in:		Mexico	Mexico	Mexico
Item Code		11.9121	11.9019	11.9010
Price		\$220	\$120	\$88

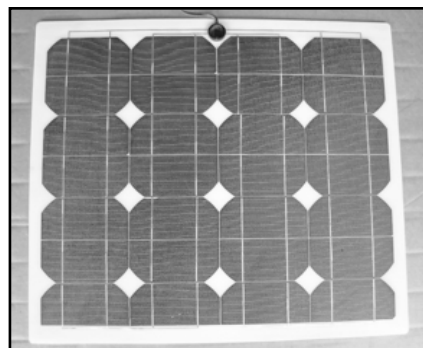


12V 28 Watt Fountain Pump Module

We designed this fiberglass laminated module to power small 12 volt bilge pumps for use in fountains directly without using a battery or control.

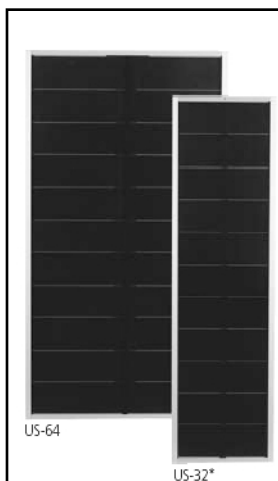
Typical modules with 36 cells have a peak power voltage of 17 volts and go over 20 volts with no load connected. We use 28 cells in series to keep the voltage low and use larger cells than you would normally find in a 28 watt module to increase current. The result is a module with a 2.1 amp output at 13.6 volts in full sun. The open circuit voltage is 15.5 volts so these modules stay in the operating range of any small pump designed to run on a 12 volt battery with a draw of 2 amps or less. Dimensions are 21.3" x 19" x .25". Not UL listed. 2-year warranty.

Description	Item Code	Price
28 Watt Fountain Pump Module	11.9028	\$180



UNI-SOLAR Framed Photovoltaic Modules

Each UNI-SOLAR® framed solar module uses UniSolar's proprietary Triple Junction spectrum-splitting thin film amorphous silicon cell design to achieve high performance. Encapsulated in UV-stabilized polymers and framed with anodized aluminum. A Galvalume steel backing provides stiffness to the module. Bypass diodes are connected across each cell, allowing the modules US-64 are equipped with weather-resistant junction boxes to accept 1/2-inch conduit. Maximum system voltage rating is 600VDC. US-32 is not available at this time. 20 year warranty. UL listed



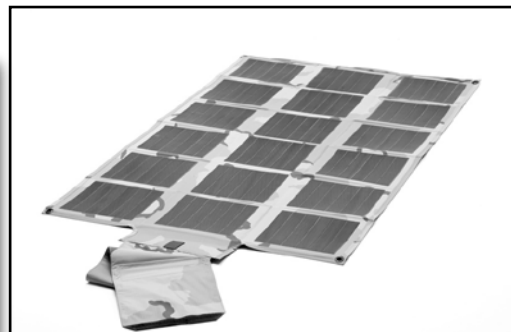
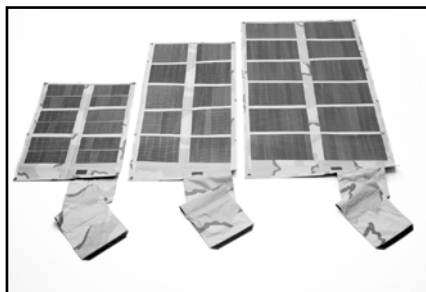
Module		US-64
Peak power	Watts	64
Peak power voltage	Volts	16.5
Peak power current	Amps	3.88
Open circuit voltage	Volts	23.8
Short circuit current	Amps	4.8
Nominal voltage	Volts	12
Series fuse rating		8
Weight (lbs)		20.2
Length	Inches	53.78
Width	Inches	29.18
Item Code		11.3110
Price		\$459

Retail prices in this catalog are subject to change without notice.

20 - PORTABLE PV MODULES

Global Solar P3 Folding Solar Modules

- Portable and lightweight
- Available from 15 to 48 watts
- Tough rip-stop nylon backing
- 12 and 24 VDC rated products
- Weatherproof and UV resistant
- Anti-reflection coating
- Velcro pouch for accessories
- SAE 2-prong water-resistant plug
- Some power under overcast skies
- Colors available in Desert Camo or Woodland Camo



The P3 is a solar-energized power generator for mobile power needs. Incorporating solid state, thin-film, PowerFLEX™ solar technology, the P3 provides an excellent choice for situations that require lightweight, durable, silent power. Recharge batteries, power communication equipment and mobile electronics, or increase battery run time the P3. It provides silent energy independence to the user.

The P3 Portable Power Pack is used worldwide to provide users an alternate power generator for charging lead-acid, Nickel Cadmium (NiCd), Nickel-Metal-Hydrate (NiMH) and Lithium Ion rechargeable batteries. The P3 will enable extended missions, provide energy security, restore power silently and can provide power for remote, portable surveillance equipment.

Twice the power-to-weight ratio of alternative solar generators, the P3 is ideal for situations requiring power renewal to batteries and mobile electronics. The P3 Portable Power Pack folds for easy transport and storage.

P3 Power Packs are available with desert or woodland camouflage coloring. Cables and accessories are available below.

Module		P3-15 Watt	P3-30 Watt	P3-48 Watt	P3-48 Watt	P3-55 Watt
Peak Power	Watts	15	30	48	48	55
Nominal Voltage	Volts	12	12	12	24	16
Peak power voltage	Volts	18.8	18.8	18.8	37.8	20
Peak power current	Amps	0.78	1.5	2.5	1.2	2.8
Open circuit voltage	Volts	36	36	28	55	30
Short circuit current	Amps	1.0	2.2	3.9	1.8	3.7
Dimensions (opened)	Inches	28 x 21 x 0.1	44 x 21 x 0.1	52 x 29 x 0.1		55 x 32 x 0.1
Dimensions (folded)	Inches	10.5 x 8.5 x .75	10.5 x 8.5 x 1.2	14.5 x 8.5 x 1.4		11 x 9 x 1.3
Weight	Lbs.	1.6	2.4	3.9		3.7
Item Code - Desert Color		11.2917	11.2911	11.2907	11.2909	11.2903
Item Code - Woodland Color		11.2919	11.2913	11.2908	11.2910	11.2904
Price		\$319	\$539	\$859	\$859	\$959

Accessories for Folding Modules

P3 and SUNLINQ folding modules have output power cables with SAE 2-conductor trailer plugs. This 5 piece accessory cable set contains adaptors for male and female cigarette lighter (CLA) plugs, battery clips, an 8 foot extension cable and 2.5 mm coaxial barrel plug. These can be used to facilitate auto battery charging, using modules to power CLA adapters for cell phones, Ipods, radios and CD players.

SUNLINQ™ modules have a regulated output and can be directly connected to CLA from portable devices designed to plug into auto cigarette lighter outlets. P3 modules are unregulated and require a charge controller to safely operate these devices without a battery. The charge control below may be used between the P3 modules and power supplies designed to run on 12 volt battery power, even if a battery is not connected.

The 2.5 mm barrel plug allows these modules to plug into Xantrex Powerpacks for charging. See page 153 for Xantrex Powerpacks.



Accessories	Item Code	Price
5-Piece Cable Set	11.2921	\$19
7 Amp Charge Control	11.2923	\$39
2.5 mm Barrell Plug Adapter	11.2925	\$6

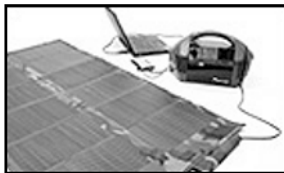
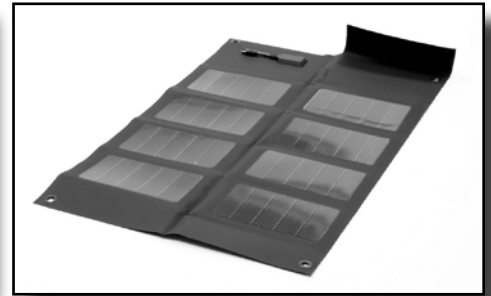
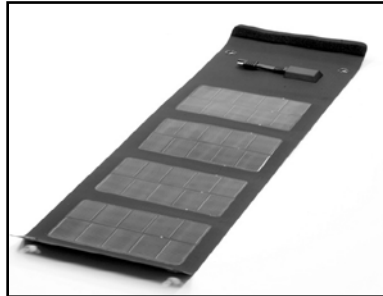
PORTABLE PV MODULES - 21

SUNLINQ™ Folding Solar Modules

SUNLINQ™ with PowerFLEX™ technology is a flexible, foldable and durable solar product that produces enough power to charge rechargeable flash lights, lanterns, cell phones, GPS units, satellite phones, MP3 players and portable games. Just about anything that is capable of being charged through a standard cigarette lighter adapter (CLA -car charger). SUNLINQ™ is available in 6.5 watt, 12 watt and 25 watt foldable solar panels.

The panels made with PowerFLEX™ technology are lightweight, flexible, weatherproof and durable CIGS (copper indium gallium diselenide) solar cells provides higher efficiency than other flexible solar cell technologies, including amorphous silicon.

Each GSE SUNLINQ™ comes with the five piece accessory kit to make it easy to charge batteries and portable power packs or run DC electronic devices. SP6.5 and SP12 have built-in charge controls limiting output to 14.8 volts. Use the 7 amp charge control on the previous page when using the SP25 to charge sealed lead acid batteries or to connect it directly to devices designed to run on 12 volt batteries. The SP25 can be connected directly to a Xantrex Powerpack without a charge control.



Module		SP25	SP12	SP6.5
Peak Power	Watts	25	12	6.5
Nominal Voltage	Volts	12	12	12
Maximum voltage	Volts	30	15.6	15.6
Peak power current	Amps	1.5	0.80	0.43
Typical Power	Watts	25	11	5.5
Dimensions (opened)	Inches	41.25 x 21.50 x 0.03	29.5 x 18 x 0.03	29.5 x 9 x 0.03
Dimensions (folded)	Inches	11 x 8.25 x .7	9 x 5 x .7	9 x 5 x .7
Weight	Lbs.	1.8	0.9	0.45
Item Code		11.2930	11.2932	11.2936
Price		\$399	\$199	\$99

DC Step-Up Adapter

This DC adapter is actually a DC-DC converter that delivers 15 to 24 VDC at up to 70 watts to power notebook computer from a 12 volt battery. It plugs into a car cigarette lighter or the cigarette lighter receptical of a Xantrex Power Pack.

This adapter is intended to be used with a battery charged by solar and cannot be connected directly to the output of a solar module.



Description	Item Code	Price
Vanson SDR-70W Step-Up Converter	30.8879	\$70

Xantrex XPower Powerpack 300Plus

Powered by a rechargeable battery, XPower Powerpack 300Plus provides up to 300 watts of AC power and can jump-start a car, truck, boat or small RV. It can also operate a wide range of 12 volt automotive and marine products. Ideal for power emergencies, XPower Powerpack 300Plus comes with a built-in fluorescent emergency light and jump-start cables. The built-in 20 amp-hour battery will power a cordless telephone for up to 40 hours, a laptop computer for up to six hours, and a portable stereo for up to 17 hours. The fluorescent light that comes with it will run for up to 25 hours on a fully charged battery.



Description	Item Code	Price
XPower Powerpack 300 Plus	30.1513	\$130

22 - POWERFILM FLEXIBLE PV

NEW! PowerFilm Roll Up Modules

These new super-light weight rollable marine grade modules are flexible enough to roll around a 3" diameter tube for storage. Wrap around straps keep them rolled up, and a 15 foot cord makes it easy to connect to any of the accessories. These modules are great for backpacking, camping and trekking.



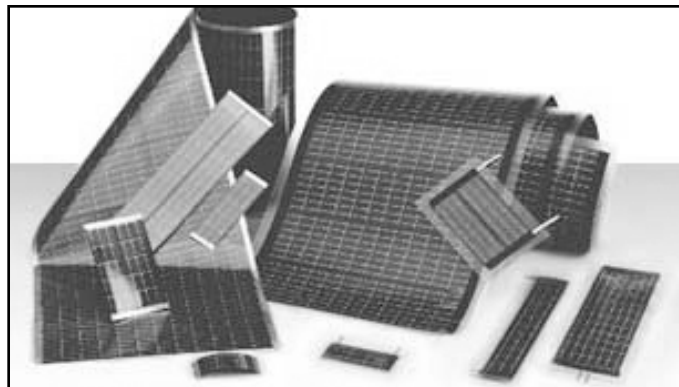
PowerFilm Model >		R15-1200	R15-600	R15-300
Peak Power	Watts	18	9	4.5
Peak Power Voltage	Volts	15.4	15.4	15.4
Peak Power Current	Amps	1.2	0.6	0.3
Nominal voltage	Volts	12	12	12
Length	inches	73	38	21
Width	inches	12	11.5	11.5
Weight	lbs	1.9	1	0.5
Item Code		11.5105	11.5103	11.5101
Price		\$375	\$198	\$102

Rollup Module Accessories

The items listed below connect to the output cord of the Rollup Modules. The RA-6 Daisy chain accessory allows parallel connection of a second module

PowerFilm Accessories	Item Code	Price
RA-1 Male Cigarette Lighter Adapter	11.5121	\$8.50
RA-2 Female Cigarette Lighter Adapter	11.5122	\$8.50
RA-3 Battery Charger for AA & AAA	11.5123	\$16.00
RA-4 Standard Charger Pack	11.5124	\$45.00
RA-5 Delux Universal Charger Pack	11.5125	\$120.00
RA-6 Daisy Chain Adapter	11.5126	\$8.50
RA-7 15 Foot Extension Cord	11.5127	\$10.50
RA-8 Extension Cord w/ Battery Clips	11.5128	\$14.50
RA-9 Powerfilm Charge Control	11.5129	\$32.00

Ultra Flexible Plastic Solar Modules



PowerFilm® products are paper thin, offer unsurpassed flexibility, are durable, and have a significant weight advantage over heavier metal-based and glass-based solar modules.

Technology

Imagine taking paper-thin plastic film and making it generate power again and again. That's PowerFilm. PowerFilm integrated solar modules have a paper thin durable polymer substrate 2 mils (0.05 mm) or less thick and are monolithically integrated. Environmentally-friendly amorphous silicon is the semiconductor absorber layer. PowerFilm is developed and manufactured by Iowa Thin Film Technologies (ITFT).

PowerFilm® Wireless Electronics Series

Modules in the PowerFilm® Wireless Electronics Series offer a new opportunity to solve the old problem of limited power for wireless electronics for portable and remote applications. PowerFilm® Wireless Electronics modules are lightweight, paper thin, and durable. Their ultra-thin profile enables them to be easily integrated with devices for solar recharging or direct powering. Modules have been specifically developed to recharge AA, AAA, and 6- and 12-volt batteries. These modules do not have a UV-stabilized surface. For connection, just solder or crimp to the copper tape.

PowerFilm® RC Aircraft Series

The PowerFilm® RC Aircraft Series modules are designed to be easily integrated with RC Aircraft. These PowerFilm® modules are very lightweight, wires can be soldered on the back of the module via the extended copper tape. They have an extra edge seal for protection from fuel contamination and weather. Modules are available with a strong pressure sensitive adhesive for simple bonding. These modules do not have a UV-stabilized surface. For connection, just solder to the copper tape.

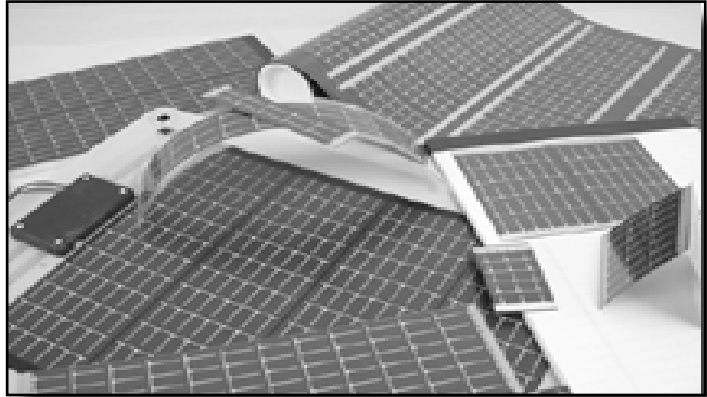
PowerFilm® WeatherPro™ Series

The PowerFilm® WeatherPro™ Series is the right choice for permanent outdoor applications that are directly exposed to the elements. The especially rugged construction of these PowerFilm® modules includes a UV-stabilized surface, extra edge seal for weather protection, and tin-coated copper leads that extend from the module. Coating the leads with an RTV silicon compound can provide a tightly-sealed package.

POWERFILM FLEXIBLE PV - 23

PowerFilm Small Modules

The PowerFilm product line offers a full line of products for diverse applications and environments. The line ranges from small 3-volt modules for wireless electronics to modules 20-Watts and larger. There are PowerFilm solar modules specifically designed for wireless electronics, RC aircraft, and permanent outdoor applications. PowerFilm can be easily integrated with devices. Its thin profile and flexibility makes it a top choice of product designers and engineers.



PowerFilm Specifications and Prices

PowerFilm® Wireless Electronics Series									
Product	Operating Voltage	Operating Current	Typ Voc	Typ Isc	Total Size (in.)	Total Thickness	Weight	Item Code	Price
SP3-37	3 V	22 mA	4.1 V	30 mA	2.5 x 1.5	0.2mm (8mil)	0.7g (0.03oz)	11.5011	\$3.95
TX3-25	3 V	25 mA	4.1 V	40 mA	4.5 x 1.0	0.2mm (8mil)	0.8g (0.03oz)	11.5013	\$2.95
MP3-37	3 V	50 mA	4.1 V	60 mA	4.5 x 1.5	0.2mm (8mil)	1.2g (0.04oz)	11.5015	\$5.95
MPT3.6-75	3.6 V	50 mA	4.8 V	65 mA	2.9 x 3.0	0.2mm (8mil)	1.6g (0.06oz)	11.5017	\$8.95
MPT3.6-150	3.6 V	100 mA	4.8 V	130 mA	2.9 x 5.9	0.2mm (8mil)	3.1g (0.1oz)	11.5019	\$17.95
SP4.2-37	4.2 V	22 mA	5.9 V	30 mA	3.3 x 1.5	0.2mm (8mil)	0.8g (0.03oz)	11.5021	\$5.95
MPT4.8-75	4.8 V	50 mA	6.4 V	65 mA	3.7 x 3.0	0.2mm (8mil)	1.9g (0.07oz)	11.5023	\$11.95
MPT4.8-150	4.8 V	100 mA	6.4 V	130 mA	3.7 x 5.9	0.2mm (8mil)	3.9g (0.1oz)	11.5025	\$22.95
MPT6-75	6 V	50 mA	8.0 V	65 mA	4.5 x 3.0	0.2mm (8mil)	2.3g (0.08oz)	11.5027	\$13.95
MPT6-150	6 V	100 mA	8.0 V	130 mA	4.5 x 5.9	0.2mm (8mil)	4.6g (0.1oz)	11.5029	\$27.95
MP7.2-75	7.2 V	100 mA	10.5 V	125 mA	10.0 x 3.0	0.6mm (24 mil)	12.9g (0.5oz)	11.5031	\$24.95
MP7.2-150	7.2 V	200 mA	10.5 V	150 mA	10.0 x 5.9	0.6mm (24 mil)	25.9g (0.9oz)	11.5033	\$39.95
MPT15-75	15.4 V	50 mA	19 V	60 mA	10.0 x 3.0	0.6mm (24 mil)	13.0g (0.5oz)	11.5035	\$26.95
MPT15-150	15.4 V	100 mA	19 V	120 mA	10.0 x 5.9	0.6mm (24 mil)	26.0g (0.9oz)	11.5037	\$44.95
PowerFilm® RC Aircraft Series									
RC7.2-37	7.2 V	50 mA	10.5 V	60 mA	10.6 x 2.2	0.2mm (8mil)	3.5g (0.1oz)	11.5051	\$16.95
RC7.2-37 PSA	7.2 V	50 mA	10.5 V	60 mA	10.6 x 2.2	0.2mm (8mil)	4.4g (0.2oz)	11.5053	\$19.50
RC7.2-75	7.2 V	100 mA	10.5 V	125 mA	10.6 x 3.5	0.2mm (8mil)	5.9g (0.2oz)	11.5055	\$29.95
RC7.2-75 PSA	7.2 V	100 mA	10.5 V	125 mA	10.6 x 3.5	0.2mm (8mil)	7.6g (0.3oz)	11.5057	\$32.95
PowerFilm® WeatherPro™ Series									
P7.2-75	7.2 V	100 mA	10.5 V	125 mA	10.6 x 3.9	1.1mm (44 mil)	31.3g (1.1oz)	11.5071	\$39.95
P7.2-150	7.2 V	200 mA	10.5 V	250 mA	10.6 x 6.9	1.1mm (44 mil)	54.9g (1.9oz)	11.5073	\$59.95
PT15-75	15.4 V	50 mA	19 V	60 mA	10.6 x 3.9	1.1mm (44 mil)	31.8g (1.1oz)	11.5075	\$39.95
PT15-150	15.4 V	100 mA	19 V	120 mA	10.6 x 6.9	1.1mm (44 mil)	56.4g (2.0oz)	11.5077	\$59.95
PT15-300	15.4 V	200 mA	19 V	250 mA	10.6 x 12.8	1.1mm (44 mil)	94.5g (3.3oz)	11.5079	\$99.95

