Inverters

The inverter is the heart of all but the smallest power systems. It is an electronic device that converts direct current DC power from batteries or solar modules into alternating current (AC)power to operate lights, appliances or anything else that normally operates on electricity supplied by the utility grid. Inverters come in many varieties and sizes with different qualities and features that optimize them for particular applications.

Off-Grid Inverters

Off-grid, or standalone, inverters convert DC power stored in batteries to AC power that can be used as needed. Select an inverter for your power system based on the maximum load you will be powering, the maximum surge required, AC output voltage required, input battery voltage and optional features needed. High quality standalone inverters are available in sizes from 100 watts, for powering notebook computers and fax machines from your car, to 60 kilowatts, for powering a commercial operation. The size of an inverter is measured by its maximum continuous output in watts. This rating must be larger than the total wattage of all of the AC loads you plan to run at one time. Wattage of most AC loads can be determined from a tag or label on the appliance, usually located near where the power cord enters, or from the owner's manual. If the inverter is expected to run induction motors, like the ones found in top loading washers, dryers, dishwashers and large power tools, it must be designed to surge, or deliver power many times its rating for short periods of time while these motors start. Standalone inverters are available with two basic power output waveforms: sine wave, and modified sine wave (the proper term is actually modified square wave, but since modified sine wave is much more commonly used, we use that term in this catalog).

Grid-tie inverters, dual-function inverters and utility companies deliver a sine wave. Exeltech, Xantrex XW Series, SMA Sunny Island, Magnum MS and OutBack FX inverters are sine wave off-grid inverters. Sine wave inverters have a higher cost, but they can operate almost anything that can be operated on utility power. Exeltech sine wave inverters are an excellent choice for power systems running audio or telecommunications equipment and other electronics that are waveform-sensitive. The OutBack and Xantrex XW series inverters can be ganged together for up to 36 kW of output and can operate off-grid or grid-tie. We now carry Samlex sine wave PST inverters for a lower cost, small-system sine wave alternative.

Xantrex TR series, Magnum, and Samlex PSE inverters have modified sine wave output with harmonic distortion of around 40%. They are an economical choice in power systems where waveform is not critical. Their high surge capacity allows them to start large motors while their high efficiency makes them economical with power when running small loads like a stereo or a small light. They can power most lighting, televisions, appliances and computers very well. Unfortunately, this type of inverter may destroy some rechargeable tools and flashlights, and laser printers and copiers. They may not allow many laser printers, copiers, light dimmers and some variable speed tools to operate. Equipment with silicon controlled rectifiers (SCRs) will not operate. Some audio equipment will have a background buzz that may be annoying to music connoisseurs.

Grid-Tie Inverters

Grid-tie, or utility intertie, inverters convert DC power from PV modules into AC power to be fed into the utility grid. There are two major types of grid-tie inverters; string inverters and low voltage input inverters.

The SMA Sunny Boy, Fronius and Xantrex GT-3 inverters are string inverters. The name "string" comes from the way the PV modules are wired together in series to achieve a higher voltage. These inverters are designed to run at voltages up to 600 VDC. String wiring is faster to install, more efficient and allows the use of smaller gauge wire. DC voltage this high can be very dangerous and life-threatening, so string inverters should be installed and serviced by qualified electricians.

Microinverters, such as the one at right, from Enphase, are bolted to the PV mounting structure beneath the solar modules. They convert the DC output of each module in a grid-tie system to AC, replacing the dangerously high DC voltages with comparatively lower AC potentials and a greatly simplified system design. The microinverter output connects directly to the breakers in the AC load center using conventional wiring. Micro-inverters provide MPPT tracking and monitoring for individual modules and allow modules to be installed in a wider variety of orientations and without the dramatic production losses caused by shading.

Module optimizers, such as those from Tigo and SolarEdge, mount behind each module like a microinverter and provide individual module MPPT tracking and monitoring, but have a DC output that is connected to a string inverter. These devices simplify system design and increase safety at a cost slightly below that of a microinverter.

Central inverters are used in larger commercial grid-tie systems, usually of 50 kilowatts to 1 megawatt or more. They are the most economical way to convert the DC output of PV systems this large to AC for connection to the utility grid.

All grid-tie PV systems use the utility company, in effect, as a storage battery. When the sun is shining, your electricity comes from the PV array, via the inverter. If the PV array is generating more power than you are using, the excess is sold to the power company through your electric meter; in such cases, your meter actually runs backward. When you need more power than the PV array can supply, the utility makes up the difference. This type of system makes the most sense in most cases where you have utility power, because there are no batteries to maintain or replace. Unfortunately, if the utility power goes down, this type of inverter will go off, too, regardless of whether or not the sun is shining.

Dual-Function Inverters

Using a dual-function inverter allows you to sell excess power to the utility, and also maintain a battery bank for standby power in the event of a utility power failure. The Xantrex XW series, and the OutBack GFX series inverters are primarily standalone inverters that can function as an intertie inverter at the same time, but with a lower efficiency than an inverter designed for grid-tie only. The new Xantrex XW is a grid-tie inverter designed to provide battery backup when the utility fails. The SMA Sunny Island inverter is designed to work with a Sunny Boy inverter to provide utility intertie (grid-tie) with battery backup.

In a typical installation, the inverter is connected to a battery bank, a subpanel for critical loads that will be powered during a power outage, and the house load center. If the utility is available, the inverter will supply the house loads from the utility. If the utility fails, the inverter will supply power to the loads from the battery. When the utility is available again, the inverter will switch the loads back to the utility, and recharge the batteries. If the batteries become fully charged by another power source, such as photovoltaic modules or a wind or hydroelectric generator, excess power may be sold back to the utility in locations where net metering is allowed.

Output Voltage

Most of the inverters we stock supply standard 120VAC 60 HZ. OutBack and Magnum inverters can be stacked in pairs for 240VAC, such as is available from utility companies and internal combustion generators. The Xantrex XW and the Magnum MS4448-AE deliver 120/240VAC power from one inverter. Most of them can be special ordered with other output voltages and frequencies for use anywhere in the world. See our export models and contact us with any special requirements that you have.

Interference

The electronic circuitry in inverters may cause problems with radio and television reception, noise on telephones and buzz in audio equipment. Sine wave inverters cause the least amount of interference. Interference can be minimized by locating the inverter very close to the batteries, twisting together the cables that connect the inverter to the battery, running AC lines separate from other wiring (such as telephone wires) and locating the inverter away from appliances that are susceptible to interference. All inverters cause interference on AM radio!

Wiring Considerations

Standalone inverters require very high current from a battery to operate large loads. A 2kW inverter running at full power in a 12-volt system will be drawing nearly 200 amps from the battery. Large cables and good connections are required for proper operation.

Use caution when plugging a small inverter into a lighter outlet located far from a battery. Typical DC house wiring may have insufficient wire sizes and too much voltage drop to supply the current required by these inverters. All battery-based inverters require proper fusing between the battery and the inverter.

Xandex

NEW! SunMizer DC Power Optimizer

SunMizer is a new per-module DC-to-DC power optimizer that performs MPP tracking at the PV module substring level to increase array power harvest. SunMizer achieves maximum power flow from the module during suboptimal module operating conditions caused by shade and soiling to recover more than half of system level power loss. Modules can now be placed on roof space that would not have been utilized in the past because modules in these areas would actually decrease system output. In addition, SunMizer optimized modules can be installed in locations to match the roofline, avoiding odd shapes and cut-outs.

Use one on each module that will be shaded

Selective installation gives SunMizer a unique advantage over competing DC power optimizers that require a unit on each module in a string. SunMizer can be installed selectively, only on the solar modules that experience regular shade or soiling. Selective installation provides optimized power output at a lower initial cost than a fully installed solution. SunMizer is lightweight (< 2 kg) and its compact dimensions of 6" x 4" x 1.6" (15 x 10 x 4 cm) make it easy to install directly to module racking with standard rack system 5/16 or 1/4 inch fasteners. Each unit has an integral grounding lug that also accepts a ring terminal connection. SunMizer is connected in-line with PV modules using standard series wiring schemes and does not require specialized wiring, or add-on equipment. SunMizer is compatible with solar modules that have 54-60 156m m cells. Modules with a maximum power rating of 250W (Pmax), no more than 48V (Voc), and 9A (Isc) can be used with the SunMizer. SunMizer is compatible with most 208V and 240V residential size inverters. SunMizer is made in the U.S. TUV certified to the UL 1741 safety standard. 20-year warranty includes a replacement labor provision.

Xandex model	Maximum module watts	Module voltage max Voc	Module amps max Isc	String voltage maximum Voc	Item code	Price
SunMizer	250	48 V	9 A	600 VDC	**030-09105**	**$312**

Suggested retail prices are subject to change; check with us for latest pricing.

Tigo Energy

NEW! Module Maximizer Solution

The Tigo Energy Maximizer Solution delivers up to 20% additional energy harvest through its dynamic module balancing technology which corrects for power mismatch caused by soiling, module aging, temperature, clouds, orientation, and shade. The Tigo Energy Module Maximizer is a DC-side solution that can be paired with any of the most popular inverters in the industry, offering a complimentary solution that enhances the performance of the system and improves overall energy production. UL and CSA Listed to UL 1741.

TIGO Energy Module Maximizer-ES (MM-ES)

The Tigo Energy Maximizer technology corrects for performance mismatch issues, which drag down the energy output of arrays. Each Tigo Energy Module Maximizer communicates with the Tigo Energy Management Unit (MU), which sets the Maximum Power Point (MPP) of each module through a patented method of impedance matching (rather than DC to DC power conversion). In the Tigo Energy Serial Solution (MM-ES) modules are connected in series as in a normal array (1 Module Maximizer per module). The MM-ES solution provides an industry-leading 99.4% average conversion efficiency, the smallest electronics footprint of its kind, and a polycarbonate enclosure, which eliminates the need for extra grounding. The MM-ES enhances the performance of shaded and unshaded arrays and is usually the best solution for standard modules with Voc below 90 volts. UL and CSA Listed to UL 1741.

TIGO Energy Module Maximizer-EP (MM-EP)

In the parallel solution (MM-EP) the Tigo Energy Module Maximizer distributes MPPT to the module, adds galvanic isolation, and DC conditioning. This solution outputs a fixed 375 volts to a parallel bus. For high-voltage modules, which are limited to short string lengths, this technology enables longer branches (up to 40 amps) reducing the cost of combining and fusing. The MM-EP is ideal for BIPV and branches with different types of modules. This solution also works well for distressed systems needing galvanic isolation and provides enhanced arc protection. The fixed voltage bus also allows the system to work at the optimal voltage range of the inverter, eliminating the need for DC pre-conditioning stage while increasing the inverter's AC conversion efficiency.

Active System Management

The Tigo Energy management software provides greater control over performance with module-level granularity, alerts, maintenance reports, and many other applications. By understanding the performance levels of each system component, maintenance can be quickly and effectively performed. On-demand maintenance reports help crews directly target problem areas which greatly reduces time in the field and O&M costs. They can arrive at the site with the correct replacement components and tools to get the job done quickly. The Tigo Energy PV-Safe feature allows system owners to disconnect the module from the bus at the Maximizer. This application can be activated with a safety button located on the Management Unit or via a remote command console. This allows for system installation, maintenance, and emergency work to be done without endangering personnel with high DC voltage.

Tigo model	Maximizer type	Module voltage	Input amps (max)	Module connector	Module watts (max)	Item code	Price
MM-EP026V200W375V-3WL	EP (parallel)	23-36	8	MC3	200	**030-09206**	**$79**
MM-EP026V200W375V-4WL	EP (parallel)	23-36	8	MC4	200	**030-09207**	**$79**
MM-EP035V200W375V-4WL	EP (parallel)	31-46	5.7	MC4	200	**030-09219**	**$79**
MM-EP045V200W375V-4WL	EP (parallel)	39-54	4.4	MC4	200	**030-09231**	**$79**
MM-EP060V200W375V-4WL	EP (parallel)	53-78	3.3	MC4	200	**030-09243**	**$79**
MM-ES060V300W-3WL	ES (series)	18-60	12	MC3	300	**030-09254**	**$56**
MM-ES060V300W-4WL	ES (series)	18-60	12	MC4	300	**030-09255**	**$56**
MM-ES060V300W-5WL	ES (series)	18-60	12	Tyco	300	**030-09256**	**$56**
MM-ES090V300W-3WL	ES (series)	50-90	6	MC3	300	**030-09266**	**$56**
MM-ES090V300W-4WL	ES (series)	50-90	6	MC4	300	**030-09267**	**$56**
MU-EPW	Management Unit for parallel Maximizers					**030-09273**	**$625**
MU-ESW	Management Unit for series Maximizers					**030-09277**	**$625**
MP60	5-year monitoring service for systems under 10kW DC					**030-09285**	**$350**
MP61	Annual monitoring service for systems above 10kW DC					**030-09287**	**$7/kW**

*Additional connector types are available, lead times may vary

SolarEdge

NEW! Distributed Power Harvesting Systems

SolarEdge makes the first end-to-end distributed power harvesting system with DC-DC power optimizers for each module combined with a specialized DC-AC string inverter to work with power optimizers, and module-level monitoring. The SolarEdge system maximizes energy yield of a PV installation with maximum power point tracking (MPPT) on each module and fixed string DC voltage. Individual module MPPT eliminates performance and power loss problems, such as lost production from partial shading, module mismatch related to manufacturer tolerance, uneven soiling or aging variance, and delayed response to dynamic weather conditions. Fixed string voltage ensures the inverter always operates at its peak efficiency voltage and prevents under-voltage power losses even on hot days.

The system is designed to automatically maintain the optimum string DC voltage for the inverter, regardless of shading, temperature, or string length. SolarEdge architecture allows flexible string length ranging from 8 to 25 modules regardless of module operating and open circuit voltages. Also, the ability to connect different length strings, as well as modules with different orientations to the sun, to the same inverter removes traditional design constraints and makes string sizing calculations unnecessary. The installation is scalable and facilitates expansion because future modules need not match existing ones. Installing a SolarEdge system typically reduces time and cost by decreasing the number of strings, DC disconnects, wires and other balance of system elements.

Module-Level Monitoring

Web-based software provides real-time monitoring, from the module to the entire installation, facilitating increased system uptime and lowering maintenance costs. Installation feedback and troubleshooting are immediate and accurate. Remote fault detection allows faster fault resolution via a semi-automatic troubleshooting process that pinpoints the location of underperforming modules on a PV site map. Module performance data is communicated over existing power lines; no additional wiring or labor is required.

The SolarEdge system ensures installer and firefighter safety at all times by automatically shutting off their modules' DC current and voltage if they sense heat of nearby fire. DC current is also automatically shut off when the SolarEdge inverter is turned off or disconnected from the grid. A safe module voltage eliminates electrocution risk during installation and servicing and protects firefighters.

SolarEdge Components

SolarEdge PowerBoxes can fit almost any crystalline silicon or thin-film module. An AOB PowerBox can be connected to a single crystalline silicon module with a maximum output of 250 watts and maximum power voltage under 60VDC. A TFI PowerBox can be connected to between two and four modules with a total maximum output of 300 watts and a maximum power voltage under 95VDC, and can be used with low power thin-film modules.

SolarEdge inverters are the only inverters designed to work exclusively with power optimizers. These simple, reliable, ungrounded inverters perform only DC to AC inversion of incoming power from one or multiple strings, because MPPT and voltage management are handled by the PowerBoxes. They work with 208 and 240 VAC systems, have built-in AC and DC disconnects, weigh 52 pounds and are 97.2% efficient. ETL Listed to UL 1741 for the U.S. and Canada.

SolarEdge Systems

SolarEdge systems are available for modules with MC3, MC4 and Tyco connectors and comes with a monitoring datalogger and communication gateway, 3 years of module-level monitoring and lifetime access to site-level web dashboard. The SolarEdge system is accompanied by 20-year warranty for the PowerBoxes and 12-year warranty for the inverters. PowerBoxes and inverters are ETL Listed to UL 1741 for the U.S. and Canada and are NEMA 3R. Order a system kit that matches the number and type of modules you plan to use, with the correct connectors. For some lower wattage modules, extra PowerBoxes may be required. Please contact us for individual component pricing.

SolarEdge system kit	Inverter AC watts	PowerBox type	PowerBox quantity	PowerBox max volts/watts	For modules w/ MC3		For modules w/ MC4		For modules w/ Tyco	
					Item code	Price	Item code	Price	Item code	Price
PHS-AOB-3.3k	3300	AOB	16	60V / 250W	**030-09402**	**$3,597**	**030-09401**	**$3,597**	**030-09403**	**$3,597**
PHS-AOB-4k	4000	AOB	20	60V / 250W	**030-09408**	**$4,090**	**030-09407**	**$4,090**	**030-09409**	**$4,090**
PHS-AOB-5k	5000	AOB	24	60V / 250W	**030-09414**	**$4,650**	**030-09413**	**$4,650**	**030-09415**	**$4,650**
PHS-AOB-6k	6000	AOB	28	60V / 250W	**030-09420**	**$5,100**	**030-09419**	**$5,100**	**030-09421**	**$5,100**
PHS-TFI-3.3k	3300	TFI	11	95V / 300W	**030-09426**	**$3,597**				
PHS-TFI-4k	4000	TFI	14	95V / 300W	**030-09432**	**$4,090**				
PHS-TFI-5k	5000	TFI	17	95V / 300W	**030-09438**	**$4,650**				
PHS-TFI-6k	6000	TFI	20	95V / 300W	**030-09444**	**$5,100**				

Suggested retail prices are subject to change; check with us for latest pricing.

Enphase

Grid-Tie Microinverter System

The Enphase Microinverter system is the first commercially available microinverter system for residential and commercial solar PV applications. The Enphase Microinverter is a fully-integrated device that converts the DC output from a single solar module into grid-compliant AC power. The microinverter system is designed to maximize energy harvest, increase system reliability and dramatically simplify design, installation and system management while also improving safety.

The power from each PV module is individually tracked by a microinverter, eliminating losses caused by under performing modules in the array. Microinverters help realize the full energy potential of every PV array, reducing the power-limiting effects of shading, dust, debris, module mismatch, and thermal differences. Problems are isolated to a small fraction of the PV array, while the rest of the PV system continues to function optimally. Service is simplified to routine maintenance.

Microinverters eliminate the need for string sizing exercises that require fitting equal lengths of module strings on a roof. Each PV module is connected directly to its own microinverter and mounted on the racking underneath. The microinverter's AC wire harnesses are connected to form a continuous AC branch circuit that leads ultimately to the AC utility distribution center.

Model Selection

Enphase makes microinverters for most popular PV modules. The M190 inverters can be used with modules of up to 230 watts made with 60 to 72 cells in series. The New D380 TwinPack Microinverter is comprised of two Enphase microinverters in a single enclosure. Its innovative cabling system further reduces balance-of-system and installation costs because it's possible to install 33% more modules per circuit with the D380. The D380 has a black anodized housing, which improves aesthetics and allows for better thermal dissipation. The D380 TwinPack is optimized for commercial applications, but is applicable to many residential installations as well.

The M210 can be used with modules of up to 240 watt with peak power voltage of 31-50 volts. This version is designed for high-efficiency modules like SunPower and SANYO.

The Enphase Microinverter is qualified to a NEMA 6 environment rating and operates at full power at temperatures from -40°C (-40°F) to 65°C (149°F), allowing applications in harsh environments. CSA Listed to UL 1741 for the U.S. and Canada. 15-year standard warranty.

M190/ M210

D380

Enphase model	Module watts	Module inputs	AC output volts	AC output watts (max)	Max DC Voltage	DC MPPT Voltage	Module connector	CEC efficiency	Item code	Price
M190-72-240-S12	150 - 230	1	240	190	54	22-40	MC4	95.0%	**030-03740**	**$230**
M190-72-208-S12	150 - 230	1	208	190	54	22-40	MC4	95.0%	**030-03742**	**$230**
M190-72-240-S13	150 - 230	1	240	190	54	22-40	Tyco	95.0%	**030-03734**	**$230**
M190-72-208-S13	150 - 230	1	208	190	54	22-40	Tyco	95.0%	**030-03735**	**$230**
D380-72-240-S12	150 - 230	2	240	380	54	22-40	MC4	95.0%	**030-03724**	**$400**
D380-72-208-S12	150 - 230	2	208	380	54	22-40	MC4	95.0%	**030-03726**	**$400**
D380-72-240-S13	150 - 230	2	240	380	54	22-40	Tyco	95.0%	**030-03725**	**$400**
D380-72-208-S13	150 - 230	2	208	380	54	22-40	Tyco	95.0%	**030-03727**	**$400**
M210-84-240-S12	150 - 240	1	240	210	62	31-50	MC4	95.5%	**030-03744**	**$245**
M210-84-208-S12	150 - 240	1	208	210	62	31-50	MC4	95.5%	**030-03745**	**$245**

Suggested retail prices are subject to change; check with us for latest pricing.

Enphase

Module Level Monitoring

Enphase Energy's per-module monitoring technology is integrated into the Enphase Microinverter System, meaning there's no need for a bolt-on or standalone third-party monitoring tool. Every microinverter communicates with the Enphase Enlighten website to show you a physically accurate representation of your entire system and the performance of each PV module in real time. Data is monitored 24/7 and Enlighten will immediately notify you via email of any issues it detects. For example, Enlighten will notify you if an individual module is under performing compared to its neighboring modules. One Envoy communications gateway is required for monitoring on each installation of up to 250 inverters. A Line Communication Filter is required for installations with more than 250 inverters.

The Enphase Envoy communications gateway plugs into any standard AC outlet and collects microinverter performance information over the existing power line. No additional wiring is required. By plugging the Ethernet cable of the Envoy into a broadband router, performance data is automatically transmitted to Enlighten using the site's existing internet connection, further simplifying installation. The Envoy comes with a 90-day free trial of Enlighten monitoring subscription. One-year and 5-year per-inverter subscriptions are available for continued monitoring. CSA Listed to UL 60950.

Enphase model	Enphase module-level monitoring	Item code	Price
IEMU-02	Envoy Energy Management Unit, indoor enclosure	**030-03751**	**$365**
ENLS-01-Y1	Enlighten 1-year subscription, priced per module	**030-03764**	**$2**
ENLS-05-Y5	Enlighten 5-year subscription, priced per module	**030-03765**	**$9**
ELCF-120-001	Line Communication Filter	**030-03750**	**$850**
ELPC-01	Powerline Carrier Ethernet bridge	**030-03752**	**$102**

M-series Inverter Installation Accessories

Order one install kit for each AC branch circuit of up to 15 modules in a 240-volt M190 system, 13 modules in a 240-volt M210 system, 21 modules for a 208-volt M190 installation and 18 modules for a 208-volt M210 system. An extension cable is required when inverters are mounted more than 6 feet apart.

Enphase model	Enphase installation kits	Item code	Price
EKIT-01-001	M-series installation kit for one AC branch circuit	**030-03748**	**$68**
EKIT-12-001	M-series installation kit for one AC branch circuit (qauntity 12)	**030-03748**	**$770**
EEXC-01-06	M-series extension cable with connectors at both ends - 6 foot	**030-03753**	**$73**
EEXC-01-12	M-series extension cable with connectors at both ends - 12 foot	**030-03754**	**$92**
EEXC-01-20	M-series extension cable with connectors at both ends - 20 foot	**030-03755**	**$110**

D-series Inverter Installation Accessories

Each AC branch circuit may have up to 20 modules in a 240-volt system and 30 modules in a 208-volt system. The D-series cables are ordered separately from the inverter.

Enphase model	Enphase installation kits	Item code	Price
ET3R-G2-06	Enphase AC trunk cable with drops for D380, 240VAC	**030-03776**	**$90**
ET3C-G2-06	Enpase AC trunk cable with drops for D380, 208VAC	**030-03777**	**$90**
ECWP-G2-06	Enphase AC interconnect cable 6 ft. for D380	**030-03778**	**$50**
ECWP-G2-12	Enphase AC interconnect cable 12 ft. for D380	**030-03780**	**$75**
ECWP-G2-20	Enphase AC interconnect cable 20 ft. for D380	**030-03781**	**$105**
EEXC-G2-06	Enphase extension cable, connectors/both ends, 6 ft. for D380	**030-03782**	**$60**
EEXC-G2-12	Enphase extension cable, connectors/both ends, 12 ft. for D380	**030-03783**	**$90**
EEXC-G2-20	Enphase extension cable, connectors/both ends, 20 ft. for D380	**030-03784**	**$135**

Suggested retail prices are subject to change; check with us for latest pricing.

SMA

Sunny Boy Grid-Tie Inverters

The popular SMA Sunny Boy inverters are available in sizes from 700 watts to 8000 watts, making them ideal for a wide range of applications from small residential systems to very large 3-phase industrial applications. All SMA inverters come standard with built-in LCD digital monitors that display instantaneous power output, the current day's power production, and the total energy produced since installation. All SMA inverters are compliant with UL 1741, UL 1998, IEEE-929, IEEE-1547, FCC Part 15 A & B. The new SMA inverters now have a standard 10-year warranty, with 5- and 10-year extensions available.

Sunny Boy SB700

The SB700 has a 120 VAC output and three different configurable input voltage ranges. The 120 volt output allows it to be used on 120/240 VAC systems as well as 208 VAC systems. Evergreen ES-A modules and typical 60-cell grid-tie modules cannot be used with this inverter because their voltage is too low to reach the MPPT voltage of this inverter before exceeding the maximum wattage allowed. It can be used with SANYO modules and with 36-cell and 72-cell modules. The SB700 is housed in a completely sealed stainless steel enclosure. Outdoor installation is recommended for the sealed inverters so natural air-flow can cool the heat-sink.

NEW! Sunny Boy 2000HFUS / 2500HFUS / 3000HFUS

Featuring world-class efficiency, a slim-line enclosure and reduced weight, the Sunny Boy HF series of inverters can be mounted in between wall studs, making it a good choice for new construction and space-constrained retrofits. Installation is simplified by automatic grid voltage detection and field configuration for positive ground. An input voltage range of 175 to 600 volts allows this inverter to work with a wide variety of module types and makes string sizing easier. The modern graphic display and wireless Bluetooth communication system also makes the new Sunny Boy easy to use.

Also available for the HFUS series are an installation frame for integration in between studs in wood-framed walls and an RS-485 communication unit multi-function relay.

UL Listed for the U.S. and Canada

Model	Maximum AC power	AC output volts	DC array voltage	Peak power tracking	CEC efficiency	Max AC Output 208V/240V		Dimensions H" x W" x D"	Weight (lbs)	Item code	Price
SB700USBD	700	120VAC	150-250	123-250	91.5%	7A @ 120V		12.7 x 12.6 x 7.1	43	**030-03113**	**$1,664**
	600		125-250	100-200		6A @ 120V					
	460		95-250	77-150		4A @ 120V					
SB2000HFUS	2000	208VAC 240VAC	175-600	175-480	95.0%	10A	8.5A	28 x 13.7 x 7.2	50	**030-03074**	**$2,820**
SB2500HFUS	2500		175-600	215-480	95.0%	12A	10.4A	28 x 13.7 x 7.2	50	**030-03075**	**$2,960**
SB3000HFUS	3000		175-600	220-480	95.0%	14.4A	12.5A	28 x 13.7 x 7.2	50	**030-03076**	**$3,100**
Installation frame										**CALL**	

Sunny Island

The Sunny Island inverter can be used for standalone off-grid systems, and they are a great way to add battery backup to an SMA Sunny Boy inverter based grid-connected system. UL 1741 Listed.

Grid-Tie System Backup

Combined with a grid-tie inverter system the Sunny Island can be used to backup critical loads in the event of utility grid blackouts. Connected to a bank of batteries, the Sunny Island helps keep grid-connected systems running anytime the sun is shining. The loads are actually powered directly by the grid-tie system on sunny days and by a battery bank at night. If the grid-tie inverter has a 240 VAC output, a backup system will require two Sunny Island inverters or one inverter and an autotransformer.

Model	Watts	Battery voltage	AC out volts/hertz	No load draw	Charger amps	Peak AC surge	Weight (lbs)	Item code	Price
SI5048U	5000	48 VDC	120 VAC / 60HZ	25 watts	120	150 A	139	**030-03095**	**$6,540**

Suggested retail prices are subject to change; check with us for latest pricing.

SMA

Sunny Boy 3000US and 4000US

The compact design of the Sunny Boy 3000US and 4000US inverters makes them suitable for residential and light commercial use and the integrated DC disconnect helps keep installations cost effective. They are field configurable for positive ground systems. The 3000US and 4000US are auto-sensing for use on 240 and 208 VAC applications. They come with a DC disconnect and a 4-circuit integrated fused series string combiner that can be used with fuses up to 20 amps. It is shipped with 15-amp fuses.

Sunny Boy 5000US / 6000US / 7000US / 8000US

The 5000US, 6000US and 7000US can be used in 208, 240 and 277 VAC applications. The 8000US can be used in 240 and 277 VAC applications. These inverters also come with a DC disconnect switch that connects to the bottom of the inverter. The disconnect has a 4-circuit integrated fused series string combiner that can be used with fuses up to 20 amps. The disconnect also has an input main lug for array DC input if the system has a separate combiner box. It is shipped with 15-amp fuses.

All four models are field-configurable for positive ground systems. All inverters are compliant with UL 1741, UL 1998, IEEE-929, IEEE-1547, FCC Part 15 A & B. SMA inverters now have a standard 10-year warranty.

Model	Maximum AC power	AC output volts	DC array voltage	Peak power tracking	CEC efficiency	Max AC current	Dimensions H" x W" x D"	Weight (lbs)	Item code	Price
SB3000US	3000	208VAC 240VAC	200-500	175-400 200-400	95.0% 95.5%	15A 13A	17.8 x 13.8 x 9.3	88.6	**030-03083**	**$2,900**
SB4000US	3500 4000	208VAC 240VAC	250-600	220-480 250-480	95.5% 96.0%	17A 17A	17.8 x 13.8 x 9.3	88.6	**030-03084**	**$3,580**
SB5000US	5000	208VAC 240VAC 277VAC	250-600	250-480	95.5% 95.5% 95.5%	24A 21A 18A	18.4 x 24.1 x 9.5	141	**030-03085**	**$4,680**
SB6000US	6000	208VAC 240VAC 277VAC	250-600	250-480	95.5% 95.5% 96.0%	29A 25A 22A	18.4 x 24.1 x 9.5	141	**030-03086**	**$5,020**
SB7000US	7000	208VAC 240VAC 277VAC	250-600	250-480	95.5% 96.0% 96.0%	34A 29A 25A	18.4 x 24.1 x 9.5	141	**030-03087**	**$5,470**
SB8000US	8000	240VAC 277VAC	300-600	300-480	96.0% 96.0%	32A 29A	18.4 x 24.1 x 9.5	148	**030-03100**	**$6,065**

Suggested retail prices are subject to change; check with us for latest pricing.

Sunny Boy Inverter Accessories

Sunny WebBox – Sunny Portal Connection

The SMA Sunny WebBox provides a connection between the operator's computer and the free Sunny Portal website (www.sunnyportal.com). The WebBox can be connected to a Sunny Boy, Sunny Tower, Sunny Island, or Sunny Central inverter (up to 50 units). Connection is made with 4-conductor twisted pair cable between the inverter's RS-485 output and the Sunny WebBox terminals. The Sunny WebBox connects to a local area network (LAN) with an Ethernet cable or to a phone line with the optional modem. The Sunny WebBox stores system performance data in its internal 8 MB memory or on a standard SD memory card and can be set to upload the data to the Sunny Portal website at user-selectable intervals. Password protected. 5-year warranty.

Sunny SensorBox

The Sunny SensorBox is compact in size and installs easily at the PV array. Its integrated sensors continuously monitor solar irradiation and module temperature. By using irradiation and module temperature, it is possible to calculate the expected output of the PV array for comparison to the actual power output of the inverters. This can help identify and trouble-shoot reductions in energy yield. The Sunny SensorBox sends data to the Sunny WebBox via an RS-485 data link. From there, the data can be transferred to a PC for further processing or to the Sunny Portal for automatic performance analysis. The Sunny SensorBox can accommodate up to 3 additional sensors such as ambient temperature, wind speed and an additional irradiance sensor making the performance data even more accurate. Shading, dust and dirt, defects and gradual module degradation have adverse effects on the overall performance of the PV array.

NEW! Sunny Beam Bluetooth Wireless Monitor

The new Sunny Beam features Bluetooth wireless technology for improved performance and versatility. The Sunny Beam communicates wirelessly with up to 12 Sunny Boy inverters and graphically displays all the key performance data of your solar system. It features fully automatic system monitoring, including an audible alert signal and it is powered by an integrated solar module and rechargeable battery.

The Sunny Beam simultaneously displays power output, daily energy production and the total energy production of the system. It may also be configured to display other parameters such as the overall CO_2 offset of your system, as well as your earnings in dollars. A hundred days of system performance data can be recorded and stored, and then simply transferred to a PC via a USB interface. Using the new and included Sunny Beam Webconnect software, the data can in turn be transferred to the Sunny Portal website for long-term storage, display, and evaluation. Setting up the Sunny Beam is fast and easy via an intuitive set of user menus. A Bluetooth Piggyback card is required for each Sunny Boy inverter and can be easily installed by a qualified solar professional. The Sunny Beam has a standard range of up to 150 feet but that can be extended or strengthened, in case of obstruction, through the use of the optional SMA Bluetooth repeater.

All HFUS inverters are set up to communicate with the Sunny Beam. For all other SMA inverters, order a Bluetooth Piggyback card for each inverter to be monitored. Sunny Beam includes a standard 5-year warranty.

Description	Item code	Price
SMA WebBox	030-03141	$870
Sunny SensorBox	030-03191	$700
Sunny SensorBox Anemometer	030-03193	$146
Sunny SensorBox Ambient Temp Sensor	030-03195	$65
Sunny SensorBox Additional Module Temp Sensor	030-03197	$72
SMA Sunny Beam Bluetooth	030-03120	$380
SMA Sunny Beam Bluetooth Piggyback card	030-03121	$220

Sunny Boy cables and communications boards

Model	SMA Sunny Boy communications cards	Item code	Price
RS-232-N	Module for remote communication between Sunny Boy without display and a Windows based PC. Requires cable and Sunny Data software from web. Maximum distance from PC is 50 feet.	030-03122	$175
RS-485-N	Module for remote communication between multiple Sunny Boy Inverter(s) and Sunny WebBox or 3rd party monitoring system. A 4-conductor cable required between inverters. RS-485 cable is required between one inverter and Sunny WebBox. One module is required for each inverter.	030-03123	$140
RS-232 Cable	Cable to connect a PC to single inverter using RS-232 modules – 50 feet (15 meters).	030-03147	$106
RS-485 Cable	Cable to connect to multiple inverters using RS-485 modules – 50 feet (15 meters).	030-03148	$106
Service Cable	Cable to connect a USB port to change software configuration parameters	030-03154	$210

KACO new energy

NEW! blueplanet xi Residential Grid-Tie Inverters

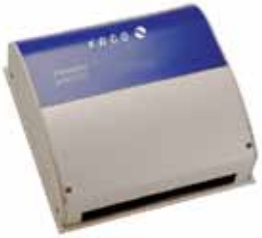
The KACO 02xi series currently includes the 1502xi, 2502xi, 3502xi and 5002xi grid tied inverters. The units come with an integrated connection box with a DC/AC switch satisfying the NEC requirement for disconnecting the AC and DC circuits. Installation is as simple as mounting a bracket to the wall, hanging the inverter and installing a single bolt into the wall. The 02xi inverters are lightweight and easy to lift onto the wall bracket. The connection box allows conduit to enter from left, right, bottom, or rear sides for increased installation flexibility. New neutral silver enclosure. The inverter CEC efficiency has been increased for all units to 95.5%. The overall design has been simplified and made more reliable using the latest generation of Digital Signal Processing (DSP) control technology. Field configuration of positive or negative ground is now provided as well as 208 VAC or 240 VAC grid connection with or without a neutral present. TUV Listed to UL 1741 for U.S. and Canada. Made in Germany. 10-year warranty standard.

Optional Monitoring

watch*DOG*

The watch*DOG* integrated communication card allows web enabled monitoring of your PV system. so you will know that it is operating at its optimum level. The KACO watchDOG monitors PV system performance from inside the connection box housing. There is no need to purchase additional external hardware. All that is needed is an active Ethernet internet connection. Through the KACO blueplanet web portal you will be able to remotely view your current production, historical production data and production trends and optional alarm functions can be configured to email you the moment that a problem arises. This will help maximize system uptime, overall performance and increase savings. The data can be accessed remotely by Performance Monitoring Reporting Service (PMRS) providers to report your system data for solar incentive reporting. You can even see inverter performance on a PDA or wireless picture frame.

pro*LOG* M Ethernet



The pro*LOG* provides remote monitoring for your PV system. Monitor up to 32 KACO inverters by connecting to the inverter's RS-485 interface and connect a PC for local monitoring. Get alarm notification via email. The pro*LOG* has 1 analog input, 1 digital input, 1 digital output.

pro*LOG* XL DSL

The pro*LOG* XL DSL has all of the features of the pro*LOG* M plus integrated LCD display and 4 analog inputs, 4 digital inputs, 1 digital output.

in*SIGHT* frames

in*SIGHT* frames are Wi-Fi enabled picture frames for use with the KACO inSIGHT RSS Feed. Upload your own personal photos and videos and access other RSS feeds. An 8" and 10" TFT LCD screen is available with 800 × 480 pixel resolution. Ambient operating temperature: 32° to 122° F. The RSS feed below is required for frame to operate.

in*SIGHT* RSS Feed

This service provides remote access to your PV data via KACO in*SIGHT* frame or your iPhone or other mobile device. It can be used to view multiple PV systems and access PV data via multiple technology portals. Use it to sync data to your website or add test system RSS feed to your online newsletters. An email alarm will notify you if there are production problems.

Model	Maximum AC power	DC array voltage	Maximum DC volts	CEC efficiency 208 / 240		Maximum AC current 208V / 240V		Weight (lbs)	Item code	Price
blueplanet 1502xi	1500 W	125-400	550	95.0%	95.5%	8 A	8 A	42	**030-03514**	**$2,150**
blueplanet 2502xi	2500 W	200-450	550	95.0%	95.5%	12.5 A	12 A	52	**030-03516**	**$2,500**
blueplanet 3502xi	3500 W	200-510	600	95.5%	95.5%	17 A	16 A	69	**030-03519**	**$2,850**
blueplanet 5002xi	5000 W	200-510	600	95.0%	95.5%	24 A	24 A	70	**030-03520**	**$3,550**
watch*DOG*	Internal monitor board								**030-03502**	**$495**
pro*LOG* M	Remote monitor for up to 32 KACO inverters								**030-03501**	**$975**
pro*LOG* XL	Remote monitor for up to 32 KACO inverters with LCD display								**030-03500**	**$1485**
in*SIGHT* Frame 10	10-inch Wi-Fi picture frame for displaying RSS feed (above)								**030-03507**	**$235**
in*SIGHT* Frame 8	8-inch Wi-Fi picture frame for displaying RSS feed								**030-03506**	**$195**
in*SIGHT* RSS Feed	Data feed for iPhone, PDA or in*SIGHT* Frames (above) – one-time fee – no subscription required								**030-03508**	**$160**

Suggested retail prices are subject to change; check with us for latest pricing.

Schneider Electric (*formerly* Xantrex)

Residential GT Grid-Tie Inverters

Schneider Electric GT Series grid-tie solar inverters have an integrated, lockable 600-volt PV/utility disconnect switch which may eliminate the need for external disconnects in some jurisdictions. A split-chassis design keeps the wiring box separate from the inverter, allowing for easy access and spacing to the AC and DC string terminals and eliminating exposed wiring during inverter installation and removal. The wiring box includes eight 3/4-inch knockouts and easy access DC and AC terminal blocks that accept wire sizes from #14 to #6 AWG. An NEC-compliant integrated AC/DC disconnect eliminates the need for external DC disconnect, and in some jurisdictions, AC disconnect. CSA Listed to UL 1741 for U.S. and Canada. 10-year warranty standard.

The GT enclosure is a NEMA 3R, allowing for both for outdoor and indoor installation. The inverter includes a slotted, hook-style back plate for easy installation. For large systems, multiple inverters can be mounted side by side centered on standard 16" stud spacing to reduce visible conduit and make installations look more attractive.

GT inverters come standard with a backlit 16-character two-line liquid crystal display (LCD). The display provides inverter power, daily and lifetime energy production, PV array voltage and current, utility voltage and frequency, time online "selling" today, fault messages, and two installer-customizable screens. Tapping a finger close to the LCD activates the backlight display. With each tap, the display cycles through the communication screens. The LCD is always on standby, ready to provide information, even at night. When inverters are daisy chained using standard Cat 5 Ethernet cable, each inverter display will report the output of the entire system. The GT offers an isolated RS-232 port and two Xanbus RJ45 communication ports. No additional communication ports or cards are needed to connect a PC.

Inverter Monitor

The monitor easily connects to Schneider Electric GT Series inverters using standard off-the-shelf Cat 5 Ethernet cable. Built-in flash memory stores PV system data and makes software upgrades simple. This connection also provides power to the monitor, removing the need for a monitor power supply. It displays total PV system performance in daily, monthly and lifetime views on a graphical 128 x 64 pixel LCD screen. The display can access detailed individual inverter performance through the device list screen and it can display individual and total system performance for up to five GT Series inverters. Wall mounting bracket and hardware included.

The Communication Gateway

The Communication Gateway connects Schneider Electric solar inverters and the system owner's computer. It logs performance data directly from the Schneider Electric GT inverters, and transmits it to the included Yahoo Widget-based monitoring software for a simple and graphically rich view of system performance. In addition to data logging, the Gateway offers a web page with the ability to configure automated email reports and fault status to the user or installer. The Gateway includes both built-in Wi-Fi and Ethernet connectivity allowing for flexible and simple set up for wireless or wired connection to a router or direct to a PC. The Gateway logs and transmits system power production, inverter-specific power production, lifetime power production history (daily, weekly, monthly) and inverter faults. It can monitor a network consisting of up to 20 single-phase GT inverters through a Cat 5 connection between each inverter and the Gateway. The Gateway can also be used with the XW Series inverters on page 101.

Schneider Electric model	Maximum AC output watts 208V / 240V	Maximum AC output amps 208V / 240V	Maximum AC output overcurrent protection	Maximum DC array amps 208V / 240V	MPPT DC output voltage range	Maximum DC voltage	CEC efficiency 208V / 240V	Item code	Price
GT2.8	2700W / 2800W	13.0A / 11.7A	20A	14.9A / 15.4A	195-550VDC	600	94.5% / 95%	**030-01801**	**$2,375**
GT3.3N	3100W / 3300W	14.9A / 13.8A	25A	16.5A / 17.5A	200-550VDC	600	94.5% / 95%	**030-01803**	**$2,875**
GT3.8	3500W / 3800W	16.8A / 15.8A	20A	19.5A / 20.0A	195-550VDC	600	94.5% / 95%	**030-01809**	**$3,130**
GT4.0N	3800W / 4000W	18.3A / 16.7A	25A	17.0A / 18.0A	240-550VDC	600	94.5% / 95%	**030-01804**	**$3,130**
GT5.0	4500W / 5000W	22A / 21A	30A	20.0A / 22.0A	235-550VDC	600	94.5% / 95%	**030-01805**	**$3,950**
GT solar inverter monitor - Monitor up to 5 inverters. Use Cat 5 cable to connect								**030-01838**	**$300**
Communications gateway - Monitor up to 20 inverters with a PC. Use Cat 5 cable to connect								**030-01813**	**$650**

Suggested retail prices are subject to change; check with us for latest pricing.

Fronius

Residential and Commercial IG Inverters

Fronius IG inverters offer high efficiency, precision maximum power point tracking, and intelligent thermal management to maximize energy output from grid-tie photovoltaic systems. Their wide input voltage range permits the use of modules in any power and voltage range. Their light weight and innovative mounting hardware make them easy to install. Fronius IG inverters come standard with an integrated LCD that displays and records over 20 parameters pertaining to inverter and system operation. Fronius inverters have 3 expansion slots that allow you to add features like external sensors and remote displays. You can use a personal computer to update the inverter with the latest software upgrades. The larger inverters (4 kW and larger) are built with multiple power stages. When these inverters see array capacity at less than half, one stage turns off, giving the inverter higher efficiency during periods of low insolation. CSA Listed to UL 1741 for the U.S. and Canada. 10-year warranty. 5-year warranty extension available.

IG Plus Inverters

Fronius IG Plus inverters offer all the features of the IG and add a lockable code-compliant DC disconnect with a six-circuit fused string combiner in a separable connection compartment that stays on the wall if the inverter needs to be serviced. The string combiner can be fused for up to 20 amps per circuit and a busbar is available for bypassing the combiner for higher current inputs. Fuses are not included. The single phase inverters are field settable for 208, 240 or 277 volts. The IG Plus 11.4-3 Delta and 12.0-3 Wye 277 at the bottom of the table below are true three-phase output units. They can be configured for positive or negative ground. CSA Listed to UL 1741 for U.S. 10-year warranty standard with 5-year extensions available.

Model	Maximum AC power	DC array voltage	CEC efficiency			Maximum AC current			AC output volts	Weight (lbs)	Item code	Price
			208V	240V	277V	208V	240V	277V				
IG 2000	2000 W	150-450	n/a	93.5%	n/a	8.35 A	n/a	n/a	240 VAC	26	**030-03402**	**$2,375**
IG 2500-LV	2350 W	150-450	93.0%	n/a	n/a	n/a	11.25 A	n/a	208 VAC	26	**030-03410**	**$2,479**
IG 3000	2700 W	150-450	n/a	94.0%	n/a	11.25 A	n/a	n/a	240 VAC	26	**030-03403**	**$2,640**
IG 4000	4000 W	150-450	n/a	94.0%	n/a	16.7 A	n/a	n/a	240 VAC	42	**030-03405**	**$3,848**
IG 4500-LV	4500 W	150-450	93.5%	n/a	n/a	n/a	21.6 A	n/a	208 VAC	42	**030-03412**	**$4,010**
IG 5100	5100 W	150-450	n/a	94.5%	n/a	21.3 A	n/a	n/a	240 VAC	42	**030-03407**	**$4,190**
IG Plus 3.0	3000 W	230-500	95.0%	95.5%	95.5%	14.4 A	12.5 A	10.8 A	All models operate at: 208 VAC 240 VAC 277 VAC	55	**030-03481**	**$3,255**
IG Plus 3.8	3800 W	230-500	95.0%	95.5%	95.5%	18.3 A	15.8 A	13.7 A		55	**030-03483**	**$3,850**
IG Plus 5.0	5000 W	230-500	95.5%	95.5%	96.0%	24.0 A	20.8 A	18.1 A		84	**030-03485**	**$5,375**
IG Plus 6.0	6000 W	230-500	95.5%	96.0%	96.0%	28.8 A	25.0 A	21.7 A		84	**030-03487**	**$5,560**
IG Plus 7.5	7500 W	230-500	95.5%	95.5%	96.0%	36.1 A	31.3 A	27.1 A		84	**030-03489**	**$6,430**
IG Plus 10.0	10,000 W	230-500	95.0%	95.5%	96.0%	48.1 A	41.7 A	36.1 A		108	**030-03491**	**$8,570**
IG Plus 11.4	11,400 W	230-500	95.5%	96.0%	96.0%	54.8 A	47.5 A	41.2 A		108	**030-03493**	**$9,720**
IG Plus 11.4-3	11,400 W	230-500	95.5%	96.0%	n/a	31.6 A	27.4 A	n/a	208/240V	108	**030-03495**	**$9,720**
IG Plus 12.0-3	12,000 W	230-500	n/a	n/a	96.0%	n/a	n/a	14.4	277	108	**030-03497**	**$9,990**
Extended warranty - 15 years total for IG 4, 4.5 and 5 kW inverters (5-year extension over standard)											**030-03470**	**$660**
Extended warranty - 15 years total for IG 4, 4.5 and 5 kW inverters (5-year extension over standard)											**030-03471**	**$910**
Extended warranty - 15 years total for IG+ 3.0 and 3.8 inverters (5-year extension over standard)											**030-03477**	**$750**
Extended warranty - 15 years total for IG+ 5, 6 & 7.5 inverters (5-year extension over standard)											**030-03476**	**$1,250**
Extended warranty - 15 years total for IG+ 10, 11,4 & 12 kW inverter											**030-03475**	**$1,975**

Fronius IG Wireless Personal Display

The Fronius IG Personal Display readout and interface are based on the same display that comes standard on all Fronius IG Series inverters. Although tested to 150 feet indoors and 500 feet outdoors, there are many reports from the field of the units transmitting from much farther distances. The Personal Display can aggregate data for up to 15 Fronius IG inverters or show data for each individual inverter in a system – i.e., data from a system that is over 75 kW AC can be viewed together or as sub-systems. It shows instantaneous data such as power, voltage and current, and it will store the daily and cumulative data. The display offers two levels of access: easy and pro. In the easy level, homeowners can view system basics like power, energy output, CO_2 offset, and the number of dollars saved. The pro level offers more advanced information like voltage, current and grid frequency. The display can mount on a wall, or be placed on table. A wireless card is required for each inverter to be monitored. 2-year warranty.

Suggested retail prices are subject to change; check with us for latest pricing.

IG DatCom Accessories

Datalogger Boxes and Cards

Add these data communications and data logging features to your inverter and turn it into a data acquisition system and weather monitoring station. DatCom components and accessories connect to the inverter and each other with standard Cat 5 network cables and RS-232 cables. Datalogging requires a COM card to be installed in each inverter in the system and a Datalogger Box or Card or a Datalogger Web.

Datalogger Web

Datalogger Web provides data storage and PC Interface over a network connection. It works in tandem with COM Cards within the DatCom System to provide real-time and archival data. The built in Web server enables the use of network-based monitoring as well as Fronius free web-hosted data access. It supports up to 100 FRONIUS Solar Inverters per Datalogger Box.

Datalogger Box

Datalogger Box stores the data collected from the inverters and any of the optional weather sensors, and connects to a PC or an external modem to allow you to monitor your PV system from anywhere in the world. The Datalogger Easy monitors one IG inverter. The Datalogger Pro can monitor up to 100 Fronius IG inverters.

Datalogger Cards

Datalogger Cards perform the same function as the Boxes. The Easy card works for one inverter; the Pro card works for up to 100 inverters. Both cards work with a COM card and DatCom systems. Output is RS-232.

Sensor Box, Sensor Card and Sensors

A Sensor Box or Sensor Card is required to add weather sensors to your data acquisition system. The Sensor Box and Card each have 6 inputs – two for measuring temperature, one for measuring irradiance, two digital inputs for a wind speed sensor and/or kilowatt hour meter and one 20 mA current interface for a humidity sensor.

Interface Box and Card

The Interface Box enables a user to output data into an open protocol for systems with up to 100 Fronius IG Inverters. This data is made available to third-party monitoring options. This does not replace the need for a Datalogger Box or Card. This interface offers real-time open protocol data without data storage for up to 100 inverters and 10 sensor boxes. Interface Card Easy is able to provide data for one Fronius IG inverter without storage. Fronius IG.access software is free and is supplied when the Datalogger is ordered or can be downloaded from www.fronius.com. It works with Windows.

2-year warranty on all Fronius DatCom equipment.

Model	Accessory	Item code	Price
IG+ Buss Bar	Use these to bypass the internal string combiner. Two are required when a single input is over 20A	030-03464	$17
IG Personal Display	Wireless display for IG inverters - wireless card required to monitor each inverter	030-03417	$297
Wireless Card	Wireless card for personal display	030-03419	$138
COM card, retrofit	Communications card for all Fronius IG inverters	030-03425	$143
Datalogger Pro Card	Control and monitoring data storage and PC interface for up to 100 IG inverters	030-03432	$690
Datalogger Pro Box	Control and monitoring data storage and PC interface for up to 100 IG inverters	030-03431	$737
Datalogger Easy Card	Control and monitoring data storage and PC interface for 1 IG inverter	030-03434	$445
Datalogger Easy Box	Control and monitoring data storage and PC interface for 1 IG inverter	030-03435	$466
Datalogger Interface Box	Combines benefits of the Datalogger Pro and interface box	030-03436	$837
Interface Box	Use to export real time data without data storage – for up to 100 inverters	030-03440	$366
Interface Card	Use to export real time data without data storage – for up to 100 inverters - mounts in inverter	030-03438	$229
Interface Card - Easy	To export data without data storage from 1 inverter – requires Datalogger or COM Card	030-03441	$185
DatCom power supply	Used when Datalogger boxes are to far from inverters to be power over com cable	030-03439	$96
Sensor card	Monitoring interface with 6 sensor input channels	030-03443	$689
Sensor box	Monitoring interface with 6 sensor input channels	030-03442	$737
Sensor, wind speed	For measuring wind speed. Sensor box (above) is required.	030-03446	$89
Sensor, ambient temperature	For measuring outside temperature. Sensor box is required.	030-03448	$53
Sensor, module temperature	For measuring module temperature. Sticks to back of PV module. Sensor box is required.	030-03449	$111
Sensor, irradiance	Reference PV cells for measuring solar insolation. Sensor box is required.	030-03444	$243
RS-232 null modem cable	For connection of Datalogger cable to PC or cable.	030-03453	$27
Cat 5 cable 3.3 feet	Network cable for connecting inverters to each or to Sensor Box and Datalogger Box	030-03455	$4

PV Powered

Residential Grid-Tie Inverters

PV Powered inverters use significant software integration and a modular design to create a scalable platform with fewer components to increase uptime.

PV Powered delivers high reliability and technical innovations designed to lower the total cost of PV systems installation. PV Powered is the only manufacturer of a residential inverter-integrated AC/DC PV System Disconnect that is listed to the UL 98 Standard. The UL 98 Standard, called "Enclosed and Dead-Front Switches," ensures the integrated PV Powered disconnect meets all installation and inspection requirements of a PV system disconnect. Housed within an NEC compliant wire raceway, PV Powered's innovative disconnect consists of one enclosure with ample working room for installation. In addition to providing for a single point of connection from the utility service and PV array, the wire raceway's optimized knockout locations also provide options for side, bottom and back entry with minimized conduit bending. The wire raceway enables flush side-by-side mounting, eliminating the need for extra equipment and resulting in a cleaner, less expensive installation. ETL Listed to UL 1741 for the U.S.

10-year warranty, with compensation for your replacement time.

PVM1010 Data Monitoring Module

The PVM1010 provides secure, web-based access to your system's status and performance history to maximize your system uptime. The PVM1010 along with the secure internet-based server operated by PV Powered is equivalent to a standalone data logging meter and communication interface without the cost and inconvenience of installation and maintenance of a separate metering system. With registration you get access to inverter information from anywhere you can connect to the internet. Reports of power output and energy production trends, local weather conditions and forecasts, verification that your system is working at its full potential and collection and export of data for service and maintenance planning are all included at no charge. Just install the PVM1010 in each inverter to be monitored and connect to a router with Cat 5 cable.

You can also order the PVM1010 pre-installed by adding "0-M" to the end of the item code. These options are listed in the table below.

Model	Maximum AC power	DC array voltage	Maximum DC volts	CEC efficiency	Maximum AC current	AC output volts	Weight (lbs)	Item code	Price
PVP1100-SD-120	1100 W	115-450	500	90.5%	10 A	120VAC	55	**030-03819**	**$2,825**
PVP1100-SD-120-PVM	1100 W	115-450	500	90.5%	10 A	120VAC	55	**030-03819-M**	**$3,224**
PVP2000-SD-240	2000 W	115-450	500	92.0%	9 A	240VAC	65	**030-03821**	**$2,950**
PVP2000-SD-240-PVM	2000 W	115-450	500	92.0%	9 A	240VAC	65	**030-03821-M**	**$3,349**
PVP2500-SD-240	2500 W	140-450	500	94.5%	11 A	240VAC	70	**030-03822**	**$3,309**
PVP2500-SD-240-PVM	2500 W	140-450	500	94.5%	11 A	240VAC	70	**030-03822-M**	**$3,708**
PVP2800-SD-208	2500 W	180-450	500	92.0%	13 A	208VAC	70	**030-03823**	**$3,610**
PVP2800-SD-208-PVM	2500 W	180-450	500	92.0%	13 A	208VAC	70	**030-03823-M**	**$4,009**
PVP3000-SD-240	3000 W	170-450	500	93.5%	13 A	240VAC	80	**030-03824**	**$3,610**
PVP3000-SD-240-PVM	3000 W	170-450	500	93.5%	13 A	240VAC	80	**030-03824-M**	**$4,009**
PVP3500-SD-240	3500 W	200-450	500	95.5%	15 A	240VAC	85	**030-03825**	**$3,929**
PVP3500-SD-240-PVM	3500 W	200-450	500	95.5%	15 A	240VAC	85	**030-03825-M**	**$4,328**
PVP4600-SD-208	4600 W	205-450	500	95.5%	23 A	208VAC	135	**030-03814**	**$4,794**
PVP4600-SD-208-PVM	4600 W	205-450	500	95.5%	23 A	208VAC	135	**030-03814-M**	**$5,193**
PVP4800-SD-240	4800 W	200-450	500	96.0%	21 A	240VAC	135	**030-03816**	**$4,833**
PVP4800-SD-240-PVM	4800 W	200-450	500	96.0%	21 A	240VAC	135	**030-03816-M**	**$5,232**
PVP5200-SD-240	5200 W	240-450	500	96.0%	23 A	240VAC	135	**030-03818**	**$5,119**
PVP5200-SD-240-PVM	5200 W	240-450	500	96.0%	23 A	240VAC	135	**030-03818-M**	**$5,518**
PVM1010	Monitor card - 1 required for each inverter to be monitored						1	**030-03803**	**$399**

Suggested retail prices are subject to change; check with us for latest pricing.

Solectria Renewables

PVI 1800W and PVI 2500W

The PVI 1800W and PVI 2500W weigh only 34 and 36 pounds, respectively, and have low-profile sealed NEMA 4 enclosures with an interactive menu-driven LCD display. They are available in 208VAC and 240VAC versions.

The inverters are prewired so they do not have to be disassembled for installation. They can be purchased alone or panelized with AC and DC disconnects and utility meter. Panelized inverters are available below.

The PVI 1800W and 2500W are available with a 5-year standard warranty, and 10- and 15-year warranties optional. TUV Listed to UL 1741 for the U.S. and Canada.

PVI 3000W, 4000W, 5000W, 5300W

The larger inverters in the Solectria line have some of the highest CEC efficiencies, 96% on all models. They have an integrated DC disconnect with a fused DC string combiner in a detachable wiring box. A quick-mount wall bracket makes it a snap to mount this lightweight inverter line. Their universal auto-detect feature allows them to be used on 240 and 208 VAC systems. RS-232 and RS-485 ports allow connection for monitoring. ETL Listed to UL 1741 for the U.S. and Canada.

A 10-year warranty is standard.

Solectria Renewables model	Continuous AC power	DC array voltage	Peak power tracking	Max DC current	CEC efficiency	Weight (lbs)	Item code	Price
PVI 1800W	1800W	125-400	125-350 VDC	11A	92.5%	34	**030-03852**	**$2,510**
PVI 2500W	2500W	125-400	125-350 VDC	15A	93.0%	36	**030-03849**	**$2,889**
PVI 3000W	2900W	200-600	200-550VDC	16A	96.0%	47	**030-03848**	**$2,836**
PVI 4000W	3900W	200-600	200-550VDC	20A	96.0%	48	**030-03847**	**$3,498**
PVI 5000W	4900W	200-600	200-550VDC	25A	96.0%	58	**030-03846**	**$4,188**
PVI 5300W	5300W	200-600	200-550VDC	25A	96.0%	60	**030-03845**	**$4,452**

Solectria Integrated Panel

The Solectria Renewables Integrated Panel Assemblies are options that can be added to all PVI-series inverters. They can be used with inverters set to a grid voltage of 240VAC or 208VAC. This panel makes installing a PV system even faster and easier. The complete panel with inverter weighs only 65 lb (29.5 kg) and ships via UPS. The PVI 1800/2500 version includes visible-blade AC and DC disconnects, an optional revenue-grade, factory sealed, reconditioned easy-read kWh meter and meter socket all mounted on an aluminum panel using only stainless steel hardware. The design compliments the sleek, low profile construction of the inverters providing a clean, compact installation indoors and outdoors. The PVI 3000/4000/5000/5300 versions do not have a DC disconnect because it comes with these inverters. The AC disconnect is optional. Order a Panel below and an appropriate inverter above. Price of the Integrated Panels will be added to the inverter price.

Inverter model	Integrated Panel features	Item code	Price
PVI 1800/2500	Integrated Panel with meter socket without meter	**030-03855**	**$735**
PVI 1800/2500	Integrated Panel with meter socket with meter	**030-03856**	**$795**
PVI 1800/2500	Integrated Panel without meter socket and meter	**030-03858**	**$640**
PVI 3000/4000/5000/5300	Integrated Panel with meter socket and meter, with AC Disconnect	**030-03915**	**$590**
PVI 3000/4000/5000/5300	Integrated Panel with meter socket and meter, without AC Disconnect	**030-03930**	**$510**

Satcon

PowerGate Plus 3-Phase Commercial Inverters

Satcon PowerGate Plus PV inverters provide efficient and stable power, even in harsh climates. With nine power ratings, ranging from 30 kW to 1 MW (UL and CE certified) Satcon offers a wide range of solar PV inverter solutions. PowerGate Plus solutions increase efficiency by combining sophisticated system intelligence with in-depth performance monitoring, providing you with a high level of PV system command and control.

PVS-30, -50 and -75 come changeable between 208, 240 and 480 VAC. Larger models with a -2UL suffix can be changed from 208 to 240 VAC. Larger models with a -4UL suffix are for use with 480 VAC. The PVS-500 and PVS-1MW w/ external transformer are designed for use on medium voltage systems. Satcon inverters come with a 5-year warranty standard, with 10-, 15- and 20-year warranties available.

Satcon model	Continuous output (kW)	AC output voltage	Max AC amps/phase	MPPT range	Fused subarray input options	CEC efficiency	Weight (lbs)	Item code	Price
PVS-30	30	208 240 480	84 70 36	305-600	4@50A or 5@40A	95.0%	1,204	**030-03242**	**$35,076**
PVS-50	50	208 240 480	139 121 60	305-600	4@80A or 5@63A	95.5%	1,732	**030-03239**	**$41,148**
PVS-75	75	208 240 480	208 181 91	315-600	5@100A or 6@80A	96.0%	2,150	**030-03244**	**$56,880**
PVS-100-2UL	100	208 240	278 241	315-600	5@110A or 6@100A	96.0%	2,350	**030-03280**	**$60,988**
PVS-100-4UL	100	480	121	315-600	5@110A or 6@100A	96.0%	2,350	**030-03240**	**$60,988**
PVS-135-2UL	135	208 240	375 325	310-600 320-600	5@160A or 9@100A	96.0%	2,684	**030-03245**	**$83,424**
PVS-135-4UL	135	480	163	310-600	5@160A or 9@100A	96.0%	2,684	**030-03241**	**$83,424**
PVS-250-2UL	250	208 240	694 601	320-600	5@160A or 9@100A	96.0% 97.0%	4,500	**030-03247**	**$141,410**
PVS-250-4UL	250	480	301	320-600	5@160A or 9@100A	97.0%	4,500	**030-03248**	**$148,678**
PVS-375-4UL	375	480	451	320-600	15@160A or 24@100A	95.5%	5,500	**030-03246**	**$192,444**
PVS-500 ext. transformer	500	200*	1388	333-600	20@160A or 30@100A	97.0%	5,900	**030-03250**	**$229,574**
PVS-500-4UL	500	480	602	320-600	20@160A or 30@100A	96.0%	9,100	**030-03249**	**$233,682**
PVS-1MW ext. transformer	1,000	265*	1388 602	420-815	28@160A or 40@100A	96.0%	12,000	**030-03251**	**$461,676**

* For medium voltage utility system connection.

Suggested retail prices are subject to change; check with us for latest pricing.

Satcon PV View Plus

Monitor and control system performance to increase uptime, output, and overall profitability. Satcon PV View Plus provides a comprehensive view of an array's performance,

PV View Plus adds an advanced layer of intelligence to PowerGate Plus, giving you complete visibility into and control over the variables that affect energy conversion. Real-time data acquisition and performance monitoring make it easy to assess array output, evaluate site conditions, pinpoint problems, and identify maintenance needs rapidly before performance is compromised.

Critical performance information is delivered through a centralized dashboard. By aggregating data, PV View Plus establishes benchmarks for normal performance, predicts anomalies, and provides system health information, helping a PV plant operate at peak performance.

Satcon options	Item code	Price
Satcon PV View direct monitoring - 10 years	030-03350	$17,270
Satcon PV View direct monitoring - 5 years	030-03352	$8,635
Satcon Revenue Meter Assembly	030-03351	$4,250
Satcon PV View Gateway	030-03353	$1,970
Satcon PV View Weather Station	030-03354	$8100

Accessories and Warranties for Satcon Inverters

Order one sub-combiner from the table below for each Satcon inverter. Sub-combiners and monitoring for Satcon inverters are factory installed and *must be ordered with the inverter*.

Warranties are total number of years and include the inverter's standard 5-year warranty. Where there are 2 item codes for a warranty, the bottom one is for the 480V version.

Satcon accessories			Sub-combiners		PV zone		Warranties					
							10-year		15-year		20-year	
For use with model #	Number of input strings	Max amps	Item code	Price	Item code	Price	Item code	Price	Item code	Price	Item code	Price
PVS-30	4	50	030-03317	$2,163	030-03362	$762	030-03260-10	$4,761	030-03260-15	$7,142	030-03260-20	$9,047
	5	40	030-03318	$2,252	030-03363	$728						
PVS-50	4	80	030-03319	$1,848	030-03364	$757	030-03261-10	$5,148	030-03261-15	$7,722	030-03261-20	$9,782
	5	63	030-03320	$1,921	030-03365	$880						
PVS-75	5	100	030-03321	$1,273	030-03366	$1,020	030-03262-10	$5,148	030-03262-15	$7,734	030-03262-20	$9,796
	6	80	030-03322	$1,363	030-03367	$1,224						
PVS-100	5	110	030-03323	$1,273	030-03368	$1,023	030-03263-10	$5,268	030-03263-15	$7,901	030-03263-20	$10,007
	6	100	030-03324	$1,363	030-03369	$1,224	030-03264-10	$5,268	030-03264-15	$7,901	030-03264-20	$10,007
PVS-135	5	160	030-03325	$2,354	030-03370	$1,219	030-03265-10	$5,268	030-03265-15	$8,905	030-03265-20	$11,281
	9	100	030-03326	$2,388	030-03371	$1,501	030-03266-10	$5,268	030-03266-15	$8,905	030-03266-20	$11,281
PVS-250	2 x 12	100	030-03327	$6,389	030-03372	$2,430	030-03267-10	$7,679	030-03267-10	$12,670	030-03267-20	$14,590
	10	160	030-03328	$2,983	030-03373	$2,482						
	15	100	030-03329	$1,908	030-03374	$3,800	030-03268-10	$8,229	030-03268-10	$13,577	030-03268-20	$15,635
PVS-375	15	160	030-03330	$4,195	030-03375	$3,440	030-03269-10	$10,380	030-03269-15	$17,646	030-03269-20	$19,723
	20	110	030-03331	$2,427	030-03376	$4,622						
	24	100	030-03332	$2,785	030-03377	$5,100						
PVS-500	2 x 15	200	030-03333	$8,827	030-03378	$3,443	030-03271-10	$12,935	030-03271-15	$20,983	030-03271-20	$23,452
	20	160	030-03334	$6,765	030-03379	$3,025						
	30	100	030-03335	$8,122	030-03380	$4,226	030-03270-10	$12,343	030-03270-15	$21,990	030-03270-20	$24,577
PVS-1MW	4 x 15	200	030-03336	$17,654	030-03381	$6,883	030-03272-10	$26,468	030-03272-15	$44,996	030-03272-20	$50,289

PV Powered

Commercial Grid-Tie Inverters

PV Powered commercial inverters combine high reliability, low lifetime cost and high efficiency into one easy-to-install system. They are designed for 20-plus years of operation, enabled by an array of new features including busbars for all power connections, a sealed electronics module and an instrumented cooling system. The highly integrated system was designed to save commercial installers time with load break rated AC and DC service disconnects, certification for installation without a neutral conductor, cable landing points sized for maximum NEC-compliant cables and a well-planned cable bending radius for top, bottom and side cable entry options. Choose the proper subarray combiner for the inverter size you are using from the chart below.

PV Powered commercial three-phase inverters offer a voltage window of 295-600VDC, a wide operating range with low standard MPPT voltage. This provides the ability to string with all PV modules currently available including new thin film modules. Serviceability is enhanced by a modular design that divides the inverter into easy-to-maintain subsystems. 10-year warranty, with extension to 20 years available at 20% of inverter price. ETL Listed to UL 1741 for the U.S.

NEW! PVP260kW

The PVP260kW has a standard 295VDC minimum MPPT and an optional full power 265VDC minimum MPPT- the lowest MPPT voltage of any commercial inverter in the industry. This low input voltage option enables stringing with all PV module technologies including new thin film modules. The PVP260kW also simplifies performance monitoring by offering inverter-integrated solutions from Fat Spaniel, Draker and Energy Recommerce. Additional options from PV Powered include integrated revenue grade meter and sub-combiner monitoring.

IntelliString Smart Combiner Box

PV Powered string combiners have touch-safe fuse holders, solid busbar and bridge punched back panels to help this smart string combiner box install quickly and last the life of the PV system. String current monitoring is enabled by the integrated DC Solar Current Monitor from Obvius, selected for its robust and easy to use design, modbus output, and built-in user adjustable alarming functions which simplify data collection and reporting. String-level performance data is a valuable tool for PV system owners because it enables fast diagnosis of PV system underperformance due to failed modules, shading or soiling. Monitoring at the string level has been primarily used on large expensive systems due to the high cost. Now, the IntelliString line of smart string combiner boxes offers a solution that is practical and affordable enough to use on most commercial installations. NEMA 4X fiberglass lockable boxes. 20A max fuse size. ETL Listed to UL 1741.

PV Powered model	Continuous output (kW)	AC output voltage	Max AC amps	Max DC array voltage	MPPT range	CEC efficiency	Dimensions H" x W" x D"	Weight (lbs)	Item code	Price
PVP30-208-LV	30	208	82	600	295-500	93.0%	47.7 x 30.4 x 25.9	760	**030-03826**	**$27,100**
PVP30-480	30	480	36	600	295-500	93.5%	47.7 x 30.4 x 25.9	760	**030-03828**	**$27,100**
PVP75-208	75	208	208	600	295-500	95.5%	93 x 65.5 x 35	2750	**030-03830**	**$54,562**
PVP75-480	75	480	90	600	295-500	95.5%	93 x 65.5 x 35	2750	**030-03832**	**$54,562**
PVP100-208	100	208	278	600	295-500	96.0%	93 x 65.5 x 35	3000	**030-03833**	**$63,610**
PVP100-480	100	480	120	600	295-500	96.0%	93 x 65.5 x 35	3000	**030-03835**	**$63,610**
PVP260kW	260	480	316	600	295-500	97.0%	109 x 104 x 41	4800	**030-03820**	**$149,940**
PVP260kW-LV	260	480	316	600	265-500	96.5%	109 x 104 x 41	4800	**030-03827**	**$149,940**
Intellistring 8	Array combiner - 8-string 160 A with Modbus over RS-485 NEMA 4x fiberglass, 24" x 20" x 8"							27	**053-02750**	**$2,185**
Intellistring 16	Array combiner - 16-string 320 A with Modbus over RS-485 NEMA 4x fiberglass, 24" x 24" x 8"							48	**053-02751**	**$4,200**
6-75A Sub	Array sub-combiner - six 75 A strings for 75 kW inverter								**053-01207**	**$1,827**
6-100A Sub	Array sub-combiner - six 100 A strings for 100 kW inverter								**053-01217**	**$1,827**
16-100A Sub	Array sub-combiner - sixteen 100 A strings for 260 kW inverter								**053-01225**	**$5,150**

Suggested retail prices are subject to change; check with us for latest pricing.

Solectria Renewables

3-Phase Commercial Inverters

Solectria Renewables PVI inverters use DSP-controlled IGBT circuitry to achieve high efficiency, reliability and low installed cost. The NEMA 3R enclosure with forced ventilation allows these inverters to be mounted in full sun, on roof tops or indoors. Inverter electronics are in a sealed enclosure within the housing. Their fully integrated design includes transformer, filters and AC and DC disconnects. Disconnects face to the side. If you are using multiple inverters and need to have the disconnects facing forward to minimize distance required between inverters, contact us for pricing. Optional integrated fused DC sub-combiners are available in all units.

Solectria inverters have an RS-485 communication port. Web-based monitoring options available. Also compatible with third-party monitoring systems. Contact us for information.

The Solectria Renewables SGI 266KW, SGI 300KW and SGI 500KW are rugged, DSP-controlled, efficient PV inverters for grid-connected commercial and utility 3-phase PV and storage systems. With peak inverter power electronics efficiency at 98.5% (97% including transformer and filters) and fully integrated packaging, these inverters are highly efficient, easy to install and use, reliable and cost effective. Multiple inverters can be used together in any combination for 750kW, 1MW and multi-MW PV systems.

Inverters are ETL Listed to UL 1741 for the U.S. and Canada, and IEEE Standard 1547, and certified to IEEE 6241 NY SIR surge test requirements.

Solectria inverters come with a 5-year warranty. 10-year and 15-year warranties are available. These units ship from the Solectria factory in Massachusetts. Made in USA.

NEW! SolrenView Monitoring Hardware Included

LCD display and web-enabled SolrenView monitoring Gateway are included in all Solectria commercial inverters. Inverter direct monitoring allows you to see detailed inverter data (AC and DC) using your web-browser. Go back in time and flip through the daily, weekly, and monthly graphs up to 5 years in the past to view single events or long-term trends. The package includes email alarms with detailed descriptions of sudden system problems and a recommended course of action. Call about monitor options and prices.

Inverter model	AC power	AC output voltage	Max AC amps	Max. DC array volts	MPPT range volts DC	CEC efficiency	Weight (lbs)	Dimension H"xW"xD"	Item code	Price
PVI 13kW-208VAC	13.2 kW	208	37	475	225-380	94.0%	376	34.5x 26x13.6	030-03863	$15,230
PVI 13kW-480VAC	13.2 kW	480	16	475	225-380	94.5%	376	34.5x 26x13.6	030-03867	$15,430
PVI 15kW-208VAC	15 kW	208	42	475	225-380	94.0%	398	34.5x 26x13.6	030-03871	$17,230
PVI 15kW-480VAC	15 kW	480	18	475	225-380	94.5%	398	34.5x 26x13.6	030-03875	$17,430
PVI 60kW-208VAC	60 kW	208	166	600	330-500	94.0%	1526	76x56x29.3	030-03885	$51,900
PVI 60kW-480VAC	60 kW	480	73	600	330-500	95.5%	1526	76x54x25.3	030-03889	$50,800
PVI 82kW-208VAC	82 kW	208	229	600	330-500	94.5%	1615	76x56x29.3	030-03893	$56,200
PVI 82kW-480VAC	82 kW	480	100	600	330-500	95.5%	1615	76x54x25.3	030-03897	$54,960
PVI 95kW-208VAC	95 kW	208	261	600	330-500	94.5%	1748	76x56x29.3	030-03901	$63,480
PVI 95kW-480VAC	95 kW	480	115	600	330-500	95.5%	1748	76x54x25.3	030-03905	$61,900
SGI 266kW-480VAC	266 kW	480	886	625	300-500	97.0%	4170	79x108x37	030-03930	$150,000
SGI 300kW-480VAC	300 kW	480	1,000	625	300-500	97.0%	4760	79x108x37	030-03940	$168,000
SGI 500kW-480VAC	500 kW	480	1,667	625	300-500	97.0%	6510	79x108x37	030-03950	$230,000
Integrated fused combiner option for 13.2 kW and 15 kW inverters. Specify 6 or 7 fuses and fuse size (10A or 15A). Add:									030-03859	$540
Integrated fused subarray combiner option for 60kW and larger inverters. Specify 2-8 fuses and fuse size (40-250A). Add:									030-03860	$540

KACO new energy

NEW! XP100U

The new KACO XP100U 100 kW central inverter utilizes a digital signal processing design to increase the inverter's reliability and overall efficiency. Through the use of this digital design the inverter's reliability and functionality can be monitored and controlled remotely. The XP100U inverter series is available for 208V and 480V three-phase systems.

The XP MPPT window of 300 to 600VDC offers flexibility to work with a wide array of solar modules. This wide operating window in conjunction with the inverter's capability to adjust its pulse width modulation encourages the system to produce more kWh over the entire day by quickly and accurately adjusting the inverter's operating state to handle the constantly changing ambient conditions.

ETL Listed to UL 1741 for the U.S. and Canada. 5-year warranty and service reimbursement standard. 10-, 15- and 20-year warranty extensions available.

The inverters can be moved by folk-lift or crane. The compact size gives the system designer and installer flexible installation options. The XP can be easily installed indoors or on rooftops. The connection terminals are located right at the access points of the inverter to minimize wiring and all parameters are factory pre-set before installation. This means that the inverter can be turned on with the touch of a button. The commissioning installer must only choose the country and language settings desired in the touch-screen color LCD menu after AC/DC connections are complete.

Integrated AC and DC disconnects are included. NEMA 3R enclosure for indoor and outdoor installation.

With password-protected access to KACO's web server and instant monitoring, the system operator can access real time data on the inverter without data download from an external server. The inverter submits the data through the internet directly to your PC for you to access automatically. Additionally, the monitoring capabilities include system diagnostic functions that help the operator to analyze DC and AC performance data. Instantaneous inverter data is sent automatically to a pre-defined email address in case of any problem. System restarts or software upgrades can be done remotely.

Also included is SD card data storage for up to 8 GB of monitoring data.

KACO model	Continuous output (kW)	AC output voltage	Max AC amps	Max DC array volts	MPPT range	CEC efficiency	Dimensions H" x W" x D"	Weight (lbs)	Item code	Price
XP100U-H2	100	208	278	600	300-600	95.5%	73 x 68 x 37	2,646	**030-03511**	**$59,000**
XP100U-H4	100	480	120	600	300-600	96.0%	73 x 68 x 37	2,425	**030-03510**	**$58,000**

Schneider Electric (*formerly* Xantrex)

Xantrex GT Series 3-Phase Commercial Inverters

The GT Commercial Series grid-tie inverter makes industrial-commercial power production affordable and attractive. These high efficiency inverters are available in sizes from 30 kW to 250 kW.

The compact, 220-pound, 30 kW inverter is in a wall-mounted aluminum enclosure and requires a symmetrical array input (split array +/-180-500VDC). 100 kW and 250 kW inverters have pad-mounted epoxy-coated steel enclosures with integrated transformers and disconnects. These inverters can be configured as positive ground for use with SunPower modules. They require zero clearance on back and sides and can fit through standard doors. UL Listed. 5-year warranty; 5-year extension available.

Schneider Electric model	Continuous output (kW)	AC output voltage	Max DC amps	Max DC array voltage	MPPT range	CEC efficiency	Dimensions H" x W" x D"	Item code	Price
GT30-208	28.8	208	100	600	180-500	96%	44 x 22 x 13	**030-02003**	**$27,909**
GT100-480	100	480	347	600	300-600	96%	73 x 67 x 46	**030-02015**	**$74,455**
GT100-208	100	208	347	600	300-600	96%	89 x 67 x 46	**030-02017**	**$74,455**
GT250-480	250	480	867	600	300-600	96%	86 x 90 x 46	**030-02026**	**$122,273**

Suggested retail prices are subject to change; check with us for latest pricing.

SMA

Sunny Central 250U/500U Inverters

The Sunny Central 250U and 500U have integrated isolation transformers and deliver excellent efficiency for large PV power plant inverters.

The user interface now features a large LCD screen that provides a graphical view of daily plant production and the status of the PV array, inverter, and utility grid. The new 250U and 500U now offer optional PV string monitoring that makes troubleshooting the PV array more efficient.

The Sunny Centrals offer a variety of remote monitoring options. Users can choose from RS-485, Ethernet, or wireless communications via Bluetooth or GSM with the optional WebBox. Daily performance data can be automatically uploaded to the free Sunny Portal website. The accuracy of performance data can be increased by using the optional Sunny SensorBox which provides monitoring of local irradiance, temperatures, and wind speed. UL Listed to 1741 for the U.S. and Canada. NEMA 3R enclosure.

Sunny Central 500HEUS Inverter

The new Sunny Central 500HE-US couples to an external medium voltage transformer to accommodate long distance power feeds to distribution substations and delivers the highest efficiency available for large PV inverters. An updated user interface features a large LCD that provides a graphical view of the daily plant production as well as the status of the inverter and the utility grid. With the optional Sunny WebBox, users can now choose from either RS-485 or Ethernet based communications. Optional AC and DC disconnects and combiner boxes with string monitoring available.

SMA model	Continuous output (kW)	AC output voltage	Max DC amps	Max DC array volts	MPPT range	CEC efficiency	Dimensions H" x W" x D"	Weight (lbs)	Item code	Price
SC250U	250	480	800	600	330-600	97.0%	80 x 110 x 33	4200	**030-03041**	**$125,000**
SC500U	500	480	1600	600	330-600	97.0%	80 x 140 x 37	7165	**030-03046**	**$240,000**
SC500HEUS	500	200	1600	600	330-600	98.0%	90 x 98 x 35	3970	**030-03036**	**$210,000**

Sunny Tower 36kW, 42kW and 48kW Systems

The Sunny Tower combines the advantages of central inverters with the performance and installation advantages of string inverters by offering assembled 36kW, 42kW and 48kW systems. Each Sunny Tower consists of six 8kW, 7kW or 6kW inverters mounted on a stainless steel structure. Two Sunny Towers can be combined as 96, 84 or 72kW systems. The Sunny WebBox comes standard making the Sunny Tower internet-ready. This type of system offers the advantage of multiple array MPP tracking, optimum operation under partial load, 96% CEC efficiency and quick delivery. Sunny Towers can be assembled on-site, eliminating the need for specialized heavy equipment. The system is NEMA 3R outdoor rated and is designed for use only in three-phase systems at 208 VAC, 240 VAC or 277 VAC. Total weight is 1,115 lbs. (Tower is 330 lbs, plus six inverters.) 10-year warranty standard. UL Listed for the U.S. and Canada

NOTE: A Sunny Tower can NOT be used with less than 6 inverters, and cannot be used in single-phase systems

Model	3-phase AC voltage	Max AC power	Max AC amp output			Peak power tracking	Max DC current	Item code	Price
			208V	240V	277V				
ST36	208/240/277	36 kW	3 x 58A	3 x 50A	3 x 44A	250-480	6 x 25A	**030-03060**	**$35,482**
ST36+WebBox	208/240	36 kW	3 x 58A	3 x 50A	n/a	250-480	6 x 25A	**030-03061**	**$37,445**
ST36+WebBox 277	277/480	36 kW	n/a	n/a	3 x 44A	250-480	6 x 25A	**030-03062**	**$37,445**
ST42	208/240/277	42 kW	3 x 68A	3 x 58A	3 x 50A	250-480	6 x 30A	**030-03070**	**$38,395**
ST42+WebBox	208/240	42 kW	3 x 68A	3 x 58A	n/a	250-480	6 x 30A	**030-03071**	**$40,355**
ST42+WebBox 277	277/480	42 kW	n/a	n/a	3 x 50A	250-480	6 x 30A	**030-03072**	**$40,355**
ST48	240/277	48 kW	n/a	3 x 64A	3 x 58A	300-480	6 x 30A	**030-03057**	**$41,965**
ST48+WebBox	240	48 kW	n/a	3 x 64A	n/a	300-480	6 x 30A	**030-03058**	**$43,925**
ST48+WebBox 277	277/480	48 kW	n/a	n/a	3 x 58A	300-480	6 x 30A	**030-03059**	**$43,925**

OutBack

NEW! SmartRE Grid-Tie Inverter with Battery Backup

The SmartRE (Smart Renewable Energy) solution from OutBack Power is a simplified grid-tie inverter with backup power for residential and small commercial applications. Designed with an emphasis on ease of installation, a SmartRE solution installs and operates similarly to basic grid-tie solar inverters but with the additional benefit of providing UPS quality battery backup during utility outages. An integrated ultra-fast AC transfer switch guarantees that even computers and other sensitive backup loads never know when a utility outage occurs. Recommended AGM batteries are maintained and charged by an innovative OutBack multi-stage charging process. This valuable feature assists in providing reliable backup power and will help extend your battery life up to 10 years.

The SmartRE is a versatile product and can be installed indoors or outdoors. It's available in power levels up to 3kW. They can be either wall or pad mounted, making this the most versatile grid-tie with battery backup solution on the market. A standard 5-year warranty, with an option to add an additional five year warranty, provides peace of mind.

A display shows: Battery State of Charge, PV Active, Inverter Output, Grid Active, Generator Active. The SmartRE system is in an aluminum 42.75 x 19 x 20.38 inch (108.58 x 48.26 x 51.75 cm) NEMA 3R outdoor raintight enclosure. The 120 VAC versions weigh 134 lbs (60.7 kg) and the 120/240 VAC versions weigh 166 lbs (75.3 kg) The SmartRE system is ETL Listed to UL 1741, CSA C22.2 No. 107.1.

A matching battery enclosure holds four 31-series sealed batteries, including the new "tall" 31 series batteries. This enclosure weighs 44 lbs (19.9 kg) not including batteries. For more battery capacity, extra enclosures and battery paralleling kits are available, or some other battery bank housing can be used.

Maximum PV array wattage is 4000 watts for all four models. Battery capacity is 100 amp hours at 48VDC. CEC efficiency is 93%.

OutBack model	Continuous watts	AC current max (RMS) 120 VAC	AC current max (RMS) 240 VAC	AC output volts	Item code	Price
SRE2500-120-NA	2500	50	n/a	120	**030-04040**	**$6,999**
SRE2500-120/240-NA	2500	50	25	120/240	**030-04042**	**$7,499**
SRE3000-120-NA	3000	50	n/a	120	**030-04041**	**$6,999**
SRE3000-120/240-NA	3000	50	25	120/240	**030-04043**	**$7,499**
SRE-BE1	SmartRE Outdoor Battery Enclosure - for additional battery capacity - holds 4 type 31 batteries				**030-04049**	**$999**
SRE-BPAR	Battery Box Paralleling Kit - required to add an additional battery box.				**030-04051**	**$99**

GTFX and GVFX Grid-Tie Inverters and Systems

OutBack G-Series inverter/chargers are the grid-interactive versions in OutBack's FX inverter line. Available in either sealed (GTFX) or vented (GVFX) models, these inverters allow you to sell solar, wind, and/or hydro power back to the utility grid. If the utility power goes down, the inverter will automatically switch to battery power and your renewable energy source(s) to run your critical loads. The inverter can be set up so that either utility power or your renewable source can be used after an outage to recharge the battery bank. AC power is seamlessly switched between utility and battery power through the inverter's built-in 60A transfer switch. With the OutBack grid-interactive system, backup AC power is made available 24 hours a day in the event of a utility outage, providing reliable power and peace of mind. At night, the inverter's automatic power save mode ensures that energy is not wasted by needlessly charging your batteries from the utility grid. Daily energy production efficiency is within a few percentage points of batteryless grid-intertie systems (depending on the condition of the battery bank). Up to two G-Series inverters can be combined and wired or "stacked" for 120/240V output. G-Series inverters can be stacked in Classic Series only, which is limited to two G-Series inverters. They come with a standard 2-year warranty with an optional 3-year extension (5 years total). A 10-year warranty is available for California residents. ETL Listed to UL 1741 for U.S. and Canada.

OutBack model	Continuous watts	Battery voltage	AC out volts/ hertz	No load draw	Charger amps	Peak AC surge	Weight lbs	Item code	Price
GTFX2524	2500	24 VDC	120V/60Hz	18-20W	55A	70A	56	**030-04025**	**$2,369**
GTFX3048	3000	48VDC	120v/60Hz	21-23W	35A	70A	66	**030-04030**	**$2,369**
GVFX3524	3500	24VDC	120V/60Hz	18-20W	85A	70A	54	**030-04032**	**$2,569**
GVFX3648	3600	48VDC	120v/60Hz	21-23W	45A	70A	54	**030-04036**	**$2,569**

Indoor Systems

We offer pre-assembled, pre-wired and tested, complete one-inverter or two-inverter OutBack grid-tie power systems based on OutBack FLEXware 500 power system components. Choose a 24V or 48V system, and either the sealed or vented inverter models. Use without a solar array to provide emergency backup power, or with the addition of one or two MX-60 MPPT charge controllers and a solar array, create a fully automated utility-intertie system with battery backup. OutBack's MATE controller, HUB4, AC and DC surge arrestor, and RTS remote temperature sensor are included with each system. Other options, such as AC and DC circuit breakers, and the FLEXnet battery monitor, can be pre-installed if desired, or field installed later. The X-240 autotransformer cannot be installed in grid-tie systems because they can cause islanding situations. Batteries are required – the system will not function without them. Batteries, and battery-to-inverter cables, are not included.

These power systems are not recommended for off-grid use. They are pre-assembled in our ETL Listed shop. The whole assembly is ETL Listed to UL standards. See page 114 for additional options that can be pre-installed in power systems.

Model	FLEXware type	Inverter(s) qty – model	Rated power kW - AC output	DC voltage	Battery charger	Item code	Price
Indoor Sealed Grid-Tie Systems							
OBFW5-GTFX2524/S	500	1 – GTFX2524	2.5kW 120V	24 VDC	55 amp	**033-00201**	**$4,867**
OBFW5-GTFX2524/D	500	2 – GTFX2524	5kW 120/240V	24 VDC	110 amp	**033-00203**	**$7,930**
OBFW5-GTFX3048/S	500	1 – GTFX3048	3.0kW 120V	48 VDC	35 amp	**033-00209**	**$4,793**
OBFW5-GTFX3048/D	500	2 – GTFX3048	6.0kW 120/240V	48 VDC	70 amp	**033-00211**	**$7,659**
Indoor Ventilated Grid-Tie Systems							
OBFW5-GVFX3524/S	500	1 – GVFX3524	3.5kW 120V	24 VDC	85 amp	**033-00205**	**$5,082**
OBFW5-GVFX3524/D	500	2 – GVFX3524	7kW 120/240V	24 VDC	170 amp	**033-00207**	**$8,188**
OBFW5-GVFX3648/S	500	1 – GVFX3648	3.6kW 120V	48 VDC	45 amp	**033-00213**	**$4,993**
OBFW5-GVFX3648/D	500	2 – GVFX3648	7.2kW 120/240V	48 VDC	90 amp	**033-00215**	**$8,059**
OBFW-O-FM60	OutBack FM60 charge controller with breakers, installed in power system					**033-01513**	**$895**
OBFW-O-FM60/D	Two OutBack FM60 charge controllers with breakers, installed in 2-inverter power systems					**033-01515**	**$1,800**
OBFW-O-FM80	OutBack FM80 charge controller with breakers, installed in 2-inverter power systems					**033-01521**	**$1,058**
OBDC-GFP	Ground fault interrupter for PV array, installed in power system; two pole					**033-01221**	**$171**

Schneider Electric (*formerly* Xantrex)

Xantrex XW Sine Wave Battery-Based Inverter System

The Schneider Electric XW Series hybrid inverter/charger offers an innovative, integrated design which minimizes external balance-of-system components allowing for quick and easy installation, both off-grid and grid-tie. The XW Series offers pure sine wave capability as well as split-phase operation for 120 VAC and/or 240 VAC solutions. Up to three units can be operated in parallel or operate in a 3-phase configuration, offering 18 kW, 120/240VAC power. Certified to UL-1741 and CSA for grid-tie applications, the XW can be used as a grid-tie battery-backup inverter or an off-grid inverter. XW MPPT charge controllers are required for PV grid-tie operation.

High surge capacity is achieved by using digital control to regulate the output voltage from dropping during surge. A full 200% rated output power is delivered to load under surge conditions. Efficient, power-factor-corrected, high-current multi-stage battery charging minimizes recharge time and electricity/fuel costs, and prolongs battery life.

The inverter display panel give status-at-a-glance. LEDs indicate AC-in status, faults/warnings, equalize mode, and battery state of charge. Three-character LED indicates output power or charge current. A battery temperature sensor is included with each inverter, but only one is needed per system.

The new wall-mount design is easy to install. The Power Distribution Panel includes all AC/DC disconnects and wiring. The distribution panel and conduit box is factory wired and labeled to support one inverter in a code-compliant manner, and it has wiring space and conduit and breaker knockouts to add up to three inverters and/or four charge controllers. For each charge controller use a 60-amp input breaker and 80-amp output breaker listed in the table below.

Field-reversible door with magnetic catch makes access to wiring easy. Options include an XW connection kit for a second inverter, an XW conduit box for systems with more than two inverters or to retrofit XW inverters into existing systems which already have AC/DC disconnects. Conduit box/raceway has barriers to ensure separation between low-voltage communication cables and AC and DC wires.

XW-MPPT60-150 60A Solar Charge Controller with integrated PV ground fault protection accepts arrays with open-circuit voltage up to 150 VAC and employs dynamic maximum power point tracking. Up to four MPPT-60 charge controllers can be wired into the Power Distribution Panel.

The XW System Control Panel plugs into Xanbus network and provides a central user interface to configure and monitor all components in the system. A battery bank is required for inverter operation. A minimum bank of 100 AH is required, but a 200 AH minimum (400 AH for the XW4024) is recommended if you need to power any loads over 1000W. The Communications Gateway on page 86 can be used to connect the XW to a PC.

5-year warranty. Dimensions of the inverter are 16" x 23" x 9". The inverter is field-serviceable without needing to remove it from the wall.

Schneider Electric model	Continuous watts	Battery voltage	AC out volts/ hertz	No load draw	Charger amps	Peak AC surge	Weight (lbs)	Item code	Price
XW4024-120/240-60	4000	24 VDC	120/240V/60Hz	24W	85	50A	115	**030-01166**	**$3,250**
XW4548-120/240-60	4500	48VDC	120/240V/60Hz	26W	85	50A	115	**030-01163**	**$3,600**
XW6048-120/240-60	6000	48VDC	120/240V/60Hz	28W	100	70A	125	**030-01160**	**$4,500**
XW Power Distribution Panel	XW Power Distribution Panel w/ conduit box for 1 XW inverter							**030-01169**	**$1,500**
XW-connection kit	XW connection kit for second and third inverter, includes breakers and conduit box.*							**030-01172**	**$850**
XW-conduit box	XW empty conduit box raceway							**030-01175**	**$250**
XW-MPPT60-150	XW 60A MPPT charge controller with built-in ground fault protection.							**020-08040**	**$650**
865-1070	Input circuit breaker for charge controller 60 A 160 VDC							**030-01189**	**$25**
865-1075	Output circuit breaker for charge controller 80 A 125 VDC							**030-01192**	**$25**
XW-auto generator start	Automatic generator start module for the XW system							**030-01183**	**$200**
XW System Control Panel	Plugs into Xanbus network and provides a central user interface							**030-01181**	**$300**

* Third inverter requires additional pair of 5-foot long 4/0 battery cables, which are not included.

OutBack

Off-Grid Inverters

The sealed, externally fan-cooled OutBack FX is designed to survive harsh environments. The higher powered ventilated VFX version is a better choice in high ambient temperature applications or where generator-powered battery charging is an important part of system battery charging.

Each inverter/charger is a complete power conversion system – DC to AC inverter, battery charger and AC transfer switch. Additional inverter/chargers can be added at any time either in parallel (120VAC), series (120/240VAC), or even three-phase (120Y208 VAC) configurations, allowing the system to be tailored to the specific needs of the application, both at the time of installation and into the future. With the addition of an X-240 autotransformer, multiple inverter systems can be set up to provide 120/240 VAC split-phase output with the ability to provide full power on either 120VAC leg of the system. Up to 10 inverters can be connected together to provide up to 36 kW of continuous power capacity with the use of the HUB and the MATE controller. The inverter's powerful battery charger operates in five stages: BULK (constant current output), ABSORB (constant voltage output), FLOAT (reduced voltage output), SILENT (no charger output) and EQUALIZE (constant voltage regulation overcharging). Charge time in each stage is adjustable to provide control and to maximize the performance of the charger and battery system.

Each OutBack inverter has a programmable, auxiliary relay output connection (AUX) that provides 12VDC output to run 12V cooling or ventilation fans or operate an external relay to perform other functions, such as remote generator starting (two-wire), to disconnect external charging sources (such as PV), or to turn on a diversion load for voltage regulation. Note: The AUX relay is used to power the external cooling fan of the FX sealed inverters, so it is not available for other uses.

The transfer switch is rated for 60 amps. When an external source of AC power (either a generator or the utility grid) is detected at the "AC in" terminal on the inverter, the switch operates to transfer the loads to the external power source, and then activates the battery charger to re-charge the battery bank.

Inverters with an M-suffix are an RV/marine version. They have a transfer switch that switches hot and neutral. Dimensions: 16.25" L x 8.25" W x 11.5" H. ETL Listed to UL 1741 for the U.S. and Canada. Standard 2-year warranty with an available 5-year extended warranty.

OutBack model	Continuous watts	Battery voltage	AC out volts/hertz	No load draw	Charger amps	Peak AC surge	Wt. (lbs)	Item code	Price
OutBack Sealed/Turbo Cooled Off-Grid Inverters									
FX2012T	2000	12VDC	120V/60Hz	20 W	80	56A	56	**030-04147**	**$2,369**
FX2012MT	2000	12VDC	120V/60Hz	20 W	80	56A	56	**030-04145**	**$2,369**
FX2524T	2500	24VDC	120V/60Hz	20 W	55	70A	56	**030-04119**	**$2,369**
FX3048T	3000	48VDC	120v/60Hz	23 W	35	70A	56	**030-04121**	**$2,369**
Export Models – can be connected in parallel or 3-phase Y 400VAC									
FX2012ET	2000	12VDC	230V/50Hz	20 W	100	70A	56	**030-04140**	**$2,369**
FX2024ET	2000	24 VDC	230V/50Hz	20 W	55	70A	56	**030-04144**	**$2,369**
FX2348ET	2300	48VDC	230V/50Hz	23 W	35	70A	56	**030-04142**	**$2,369**
OutBack Ventilated Fan Cooled Inverters									
VFX2812	2800	12VDC	120V/60Hz	20W	125	56 A	54	**030-04149**	**$2,569**
VFX2812M	2800	12VDC	120V/60Hz	20W	125	56 A	54	**030-04146**	**$2,569**
VFX3524	3500	24 VDC	120V/60Hz	20W	85	70 A	54	**030-04155**	**$2,569**
VFX3648	3600	48VDC	120v/60Hz	23W	45	70 A	54	**030-04157**	**$2,569**
Export Models – can be connected in parallel or 3-phase Y 400VAC									
VFX2612E	2600	12VDC	230V/50Hz	20W	120	56 A	54	**030-04134**	**$2,569**
VFX3024E	3000	24 VDC	230V/50Hz	20W	85	70 A	54	**030-04136**	**$2,569**
VFX3048E	3000	48VDC	230V/50Hz	23W	42	70 A	54	**030-04138**	**$2,569**

Suggested retail prices are subject to change; check with us for latest pricing.

OutBack

FLEXware 500 and 1000

The FLEXware 500 supports up to two inverter/chargers and two charge controllers in an attractive, versatile and code-compliant package for installations where more power is needed. The FLEXware 1000 accommodates up to four inverter/chargers and four charge controllers. Multiple power panels can be used for systems up to 36 kW. Both the FLEXware 500 and 1000 systems provide ample locations for AC and DC breakers, DC-current shunts, an autotransformer and other items required in higher kW systems. The FLEXware MP mounting plate is used with with both FLEXware 500 and FLEXware 1000 enclosures. Use two mounting plates for the FW1000. The picture here shows the FLEXware 1000 AC and DC boxers with 4 inverters and 4 MX60 charge controllers. See page 99 for a picture of the FLEXware 500.

OutBack model	FLEXware 500 and 1000	Inverters	Item code	Price
FLEXware Mounting Plate				
FW-MP	Mounting plate for FLEXware 500 and 1000 enclosures (2 required for FW-1000 systems).	2	**030-04260**	**$179**
FLEXware 500 Power System Box and IOB Kits				
FW500-AC	FLEXware 500 enclosure with TBB-ground, DIN rail for AC breakers	2	**030-04215**	**$309**
FW500-DC	FLEXware 500 enclosure with DC breaker bracket, TBB, BBUS, 500A shunt	2	**030-04212**	**$309**
FW-IOB-D-120/240VAC	IOB kit includes six 60A 120VAC breakers and AC breaker bypass slide plate, busbars, wire	2	**030-04237**	**$249**
FW-IOB-D-120VAC	IOB kit includes six 60A 120VAC breakers and AC breaker bypass slide plate, busbars, wire	2	**030-04240**	**$219**
FW-IOB-D-230VAC	IOB kit includes six 30A 230VAC breakers and breaker bypass slide plate, TBB, wire - export	2	**030-04243**	**$199**
FLEXware 1000 Power System Box and IOB Kits				
FW1000-AC	FLEXware 1000 Enclosure with TBB-ground, DIN Rail for AC breakers	up to 4	**030-04223**	**$509**
FW1000-DC	FLEXware 1000 Enclosure with DC Breaker bracket, TBB, 2 SBUS, BBUS, 500A Shunt	up to 4	**030-04221**	**$509**
FW-IOB-D-120/240VAC	IOB kit includes six 60A 120VAC breakers and AC breaker bypass slide plate, busbars, wire	2	**030-04237**	**$249**
FW-IOB-D-120VAC	IOB kit includes six 60A 120VAC breakers and AC breaker bypass slide plate, busbars, wire	2	**030-04240**	**$219**
FW-IOB-D-230VAC	IOB kit includes six 30A 230VAC breakers and bypass slide plate, TBB, wire - EXPORT ONLY	2	**030-04243**	**$199**
FW-IOB-T-120/208VAC	IOB kit includes nine 60A 120VAC breakers and AC breaker bypass slide plate, busbars, wire	3	**030-04253**	**$309**
FW-IOB-T-230/400VAC	IOB kit includes nine 30A 230VAC breakers and bypass slide plate, TBB, wire - EXPORT ONLY	3	**030-04255**	**$309**
FW-IOB-Q-120VAC	IOB kit includes twelve 60A 120VAC breakers and AC breaker bypass slide plate, busbars, wire	4	**030-04249**	**$409**
FW-IOB-Q-120/240VAC	IOB kit includes twelve 60A 120VAC breakers and AC breaker bypass slide plate, busbars, wire	4	**030-04247**	**$409**
FW-IOB-Q-230/AC	IOB kit includes twelve 30A 230VAC breakers and bypass slide plate, TBB, wire EXPORT	4	**030-04251**	**$409**

FLEXware Components

When adding charge controllers, additional inverters or circuit breakers, these components may be necessary.

Model	FLEXware options	Item code	Price
FW-X240*	4kVA 120/240VAC autotransformer -w/ 25A 2-pole breaker for mounting inside FLEXware 500 and 1000 AC enclosures	**030-04270**	**$390**
TBB-GROUND	Ground/neutral terminal busbar with mounting screws (no insulators).	**030-04356**	**$19**
OBDC-GFP	Ground Fault Protection, 2 pole, 80A	**030-04323**	**$129**
TBB-black	Bus bar with black insulators	**030-04353**	**$19**
TBB-BLUE	Bus bar with blue insulators (for 3-phase and export versions)	**030-04359**	**$19**
TBB-RED	Bus bar with red insulators	**030-04355**	**$19**
TBB-WHITE	Bus bar with white insulators	**030-04354**	**$19**
TBB-BROWN	Bus bar with brown insulators (for export versions)	**030-04352**	**$19**
FW-BBUS	FLEXware Breaker Bus connector two 175-250A, three 100-125A, four 1-80A DC breakers or three 500 amp DC shunts	**030-04280**	**$19**
FW-CBUS	Combiner Bus connects up to eight DIN mount breakers or four DIN mount fuse holders – includes one 1/0 screw lug	**030-04361**	**$19**
FW-SBUS	FLEXware shunt bus connector allows up to four high current cable connections on same side of DC shunt	**030-04284**	**$29**
FW-CCB	FM charge controller mounting bracket for one side mounted on FW500 or FW1000 DC enclosures – with hardware	**030-04263**	**$55**
FW-CCB2	FM charge controller mounting bracket for two side mounted on FW500 or FW1000 DC enclosures – with hardware	**030-04265**	**$59**
FW-CCB2T	FM charge controller mounting bracket for two top mounted on FW500 or FW1000 DC enclosures – with hardware	**030-04267**	**$59**

*The FW-X240 Autotransformer cannot be used for stacking with a grid-interactive FX system. However, the FW-X240 can be used to step-up the AC output of a single grid-interactive FX system from 120VAC to 240VAC. These inverters are not recommended for off-grid use.

OutBack Accessories

Conduit Adapters

Use the FX-DCA to connect 2-inch conduit to the DC side of the inverter. Also required to connect inverters to the FW-500DC or FW-1000DC. Use the FX-ACA to connect to the AC side of the inverter. The FX-SP-ACA can be used in place of the FX-ACA and offers surge protection. Use either one to connect inverters to the FW-500DC or FW-1000DC.

OutBack model	OutBack inverter accessories	Item code	Price
DCA	2" conduit adapter – required to mount inverter to FLEXware 500 or 1000	030-04163	$45
FW-ACA	AC wiring compartment extension – includes two 1" conduit knockouts and an AC outlet knockout – required to mount FX or VFX to FLEXware 500 or 1000	030-04169	$45
FW-SP-ACA	AC wiring compartment with surge arrestor for AC and DC side of inverter	030-04290	$259
FW-SP-R	Replacement surge protector board for FW-SP-ACA or FW-SP-ACA	030-04294	$209

MATE Remote Monitors and Hubs

The OutBack MATE is a complete system controller and display for both the OutBack inverter/charger and OutBack MPPT PV charge controller. It provides a display of the operation and allows control and adjustment of the setpoints. The OutBack MATE also coordinates the operation of the entire system to maximize performance and to prevent multiple products from conflicting. A single OutBack MATE is able to connect to multiple inverter/chargers, OutBack MPPT PV charge controllers and any other OutBack power conversion and control products offered in the future. A maximum of ten OutBack products will be able to be connected to a single MATE via Cat 5 Ethernet type cabling with 8-wire RJ45 modular connectors and the OutBack HUB-10 communication manager. The OutBack MATE also includes an optoisolated RS-232 port with a DB9 jack for connection to the serial port of a PC computer. The MATE2 has a flush-mount black face for panel or in-wall mounting.

The FLEXnet DC System Monitor

The FLEXnet DC System Monitor integrates with an OutBack MATE communications device, providing you with the data you need concerning your system's health, performance and efficiency. Easily see your system's current condition with this at-a-glance display. This screen shows battery state-of-charge and whether you are currently charging or discharging your batteries. It monitors the amount of power your system is currently producing and consuming as well as the amount of power going IN and OUT of your battery bank. It allows the Mate to display real-time production monitoring of DC sources, such as a solar array or small wind turbine, as well as consumption by loads. It also displays the cumulative energy your system has produced and consumed as well as the total amount of energy that has gone to charging your batteries today. This screen displays each day's lowest state-of-charge and allows you to see how your overall system production compares to system consumption. Review historical energy production and consumption data for the most recent 128 days, including the minimum battery state-of-charge reached for each day. The FLEXnet DC can be used to watch power system production and consumption trends.

A **HUB** is required to connect more than one inverter to the same load or to connect inverters, MATEs and FM charge controllers to allow programming and monitoring of the entire system by the MATE.

The **RTS** remote temperature sensor is important for accurate battery charging, especially if the batteries get very warm or cold. If used with a HUB, one temperature sensor can be shared by all inverters and FM charge controllers.

OutBack model	OutBack MATE system monitor and control	Item code	Price
MATE	System control – shipped with a 50 ft Cat 5 cable	030-04180	$295
MATE-B	Black version of MATE above	030-04180-B	$295
MATE2	Flush-mount version	030-04181	$295
FlexNet DC	Advanced DC System Monitor - requires a MATE	030-04187	$379
HUB-4	Stacking kit for up to 4 inverters and/or charge controllers	030-04185	$195
HUB-10	Stacking kit for up to 10 inverters and/or charge controllers	030-04188	$375
RTS	Remote temperature sensor with 20' cable	030-04190	$29

Suggested retail prices are subject to change; check with us for latest pricing.

Apollo Solar

NEW! TSW TrueSineWave Inverter/Chargers

The Apollo Solar TSW3224 and TSW4048 include a true sine wave inverter, battery charger, and AC transfer switch in a compact modular housing. These inverters provide 120 and 240 volt split-phase AC power at 60Hz or 230VAC at 50Hz. The output provides 240 volts for well pumps, appliances, or shop tools while providing 120 volts for standard circuits. They handle 75% unbalanced loads as well. The input can accept the utility line or 240-volt AC generators. The output can be wired for single 230/240VAC output or for single 120VAC output at twice the current. Internal switches allow the option to select 230VAC or 240VAC and 50Hz or 60Hz.

Over 200% of the rated TSW power is available to allow for surges for short periods, such as starting a 3-HP motor, without interrupting sensitive computer loads. At the same time, the TSW inverters can be wired in parallel to provide additional output current. The high-current battery-charging circuit is power factor corrected and optimizes the efficient use of energy from generator or utility line input. The 4-stage charging algorithm — Bulk, Absorb, Float, Equalize — maximizes both battery life and storage capacity.

Monitoring of energy used, battery state-of-charge, and system performance is included in the Apollo TSW inverters. The two-line LCD shows all major parameters and adjusts to allow horizontal and vertical inverter installation. The TSW's ASNET port allows networking capability between multiple units as well as access to the T80/T80HV MPPT Turbocharger PV controllers. Remote system monitoring on a local Ethernet and/or on the internet is provided via the Apollo Solar Communications Gateway via the Apollo Solar GSM Modem even when telephone land line is unavailable.

22.5" x 9"x 7.25". The TSW is UL 1741 certified and carries a standard 5-year warranty. CSA C22.2 No.107.1-01 certified.

Apollo TSW TrueSineWave Inverter/Chargers

Apollo model	Continuous watts	Battery voltage	AC output volts/hertz	No load draw	Charger amps	Peak AC surge	Weight (lbs)	Item code	Price
TSW3224	3200	24 VDC	120V/240V 60Hz	29 W	100	6400W	49	**030-02615**	**$2,499**
TSW3648	3600	48 VDC	120V/240V 60Hz	35 W	70	7200W	49	**030-02619**	**$2,499**

NEW! ISM 120/240 Inverter Switchgear Module

The Apollo Solar ISM 120/240 comes factory assembled with the inverter breakers for DC input and AC input/output/bypass breakers, and slots for 18 DIN rail half-inch wide breakers. It's designed for the optional ready-to-add Apollo Solar Breaker Pacs for the T80 or T80HV MPPT Charge Controller, ground fault protection, and generator/grid selector. With the AC and DC disconnects, busbars, shunt and connectors in a single enclosure, installers need only connect the PV Input, battery cables, AC load, and optional AC line/generator input from the outside, providing a complete plug-and-play solar power switchgear package for quick, fail-safe installation. The ISM 120/240 fits all versions of the Apollo TrueSineWave, Split-Phase Inverter as well as the Apollo T80 and T80 High Voltage MPPT charge controllers.

The Apollo ISM provides 120/240VAC split phase, 120VAC single phase (or 230VAC power for the global market) with the selection of the optional Apollo Solar AC Circuit Breaker Pacs, all at the low cost of an appliance that is built, wired, and tested at the factory. With a footprint of only 11" wide, 15" tall and 7"deep, and a weight of only 11 pounds, the ISM is easily installed in tight spaces and in combination with TSW inverters and charge controllers, provides a complete power center with PV input.

The wiring box has clearly labeled connectors for the PV array input, the battery cables, and a second bypass toggle space is provided for optional generator input. The ISM 120/240 ships fully assembled, is UL 1741 Certified and NEC Compliant, and carries a standard 5-year warranty. If you are adding a charge controller to the ISM, order one of the circuit breaker kits below.

See page 122 for the Apollo T80 and T80HV charge controllers and monitoring hardware.

Apollo model	Apollo inverter accessories	Item code	Price
ISM 120/240	Inverter Switchgear Module - wiring and breaker box for off-grid installations	**030-02637**	**$799**
ISM-T80-DC Pac	DC Circuit Breaker kit to add a T80 to the ISM	**030-02640**	**$279**
ISM-T80HV-DC Pac	DC Circuit Breaker kit to add a T80HV to the ISM	**030-02642**	**$319**
ISM-Generator Selector	Add Generator input to the ISM - includes dual AC circuit breakers and toggle bar	**030-02644**	**$89**
RW-Wired	Wired remote display	**020-07085**	**$199**

Magnum

Sine Wave Inverters

MMS1012 Sine Wave Inverter/Charger

The MMS Series from Magnum Energy is a pure sine wave inverter providing a cost-effective solution for those with smaller power needs in mobile applications. Versatile, easy-to-use and lightweight, the MMS Series provides a reliable base for your energy system. The MMS Series inverter's improved design accommodates entertainment systems and small appliances in smaller RVs and boats. Based on the popular ME and MS Series inverters, the MMS is smaller, lighter and less expensive while retaining all the built-in protection and reliability of ME and MS models. The MMS charger uses a PFC (power factor corrected) charger, which is 85% efficient and the same charger topology used in all Magnum models. The MMS Series is ETL Listed to the stringent requirements of UL/cUL 458, CSA C22.2 #107.1-01 and meets the KKK-A-822E standard. Made in USA.

MS-Series Pure Sine Wave Inverter/Chargers

The MS Series inverter/charger is a pure sine wave inverter designed specifically for the most demanding mobile and off-grid applications. The MS Series is powerful, easy to use, and cost-effective. MS-series inverter/chargers are available in 12-, 24- and 48-volt versions. The M4024-AE and MS4448-AE have 120/240VAC output, eliminating the need to stack two units or buy a transformer to run 240-volt loads. The MIS2012-20B has two 20-amp AC breakers built in.

Install the MS Series in four easy steps: simply connect the inverter's output to your distribution circuits or electrical panel, connect AC power from the utility or generator to the inverter's easy-to-reach terminal block, connect the batteries, and switch on the power. Mount the MS Series on a shelf, bulkhead, or even upside down. The lightweight aluminum base and cover provide noise reduction and corrosion resistance. The MS Series has an RS-485 communication port for network expansion and a remote control port. The extra-large AC-access cover with terminal screw block and 360° DC connection terminals with covers make the inverter wiring accessible when it needs to be. The MS Series front panel has an on/off switch with an easy-to-read LED indicator. All models have a 50-amp transfer relay. MS inverters can be series stacked, using the ME-SSI, for 120/240 VAC operations. The ME-RC50 controller is required for inverter programming.

The MS Series is ETL Listed to UL/cUL 458 for mobile use and UL 1741 for off-grid installations. Dimensions: 13.75 x 12.65 x 8 inches. 3-year warranty, except MS4024-AE and MS4448-AE which has a 2-year warranty. Made in USA.

Magnum model	Continuous watts	Battery voltage	AC out volts/hertz	No-load draw	Charger amps	Peak AC surge	Weight (lbs)	Item code	Price
MMS1012	1000	12VDC	120V/60Hz	18W	50	1750W	20	**030-02320**	**$1,199**
MS2012	2000	12VDC	120V/60Hz	25W	100	3300W	43	**030-02332**	**$1,999**
MS2012-20B	2000	12VDC	120V/60Hz	25W	100	3300W	44	**030-02334**	**$2,049**
MS2812	2800	12VDC	120V/60Hz	30W	125	3900W	53	**030-02336**	**$2,299**
MS4024	4000	24VDC	120V/60Hz	25W	105	5800W	58	**030-02338**	**$2,599**
MS4024-AE	4000	24 VDC	120/240V/60Hz	27W	105	5800W	58	**030-02339**	**$2,699**
MS4448-AE	4400	48VDC	120/240V/60Hz	25W	60	8500W	58	**030-02340**	**$2,699**
Accessories and Options									
ME-RC50	Remote control for all Magnum inverters with 50-foot cable for ME, MS, MS-AE, RD						2	**030-02351**	**$229**
ME-ARC	Advanced Remote for all Magnum inverters with 50-foot cable							**030-02352**	**$299**
ME-SSI	Series stacking cable for MS-AE, MS and RD only						10	**030-02362**	**$79**
ME-AGS-N	Automatic generator start – network version for use with Magnum inverters and ME-RC50						4	**020-06377**	**$329**
ME-AGS-S	Automatic generator start – standalone version						4	**020-06375**	**$329**
ME-BMK	Battery monitor kit - ME-RC50 required with this item						4	**020-06379**	**$189**
ME-CB	Conduit Box for ME, MS, ME-AE, and RD inverters						4	**030-02360**	**$74**
ME-BMK	Remote control for MM, MM-AE, and MMS inverters						4	**030-02355**	**$59**

Suggested retail prices are subject to change; check with us for latest pricing.

Magnum Modified-Sine Wave Inverter/Chargers

MM-AE Series 12V Inverters

The MM-AE Series 12VDC inverter/charger is designed to accommodate entertainment systems and small appliances in smaller RVs, boats and cabins. Based on the popular ME, the MM is smaller, lighter and less expensive while retaining all the built-in protection and reliability of ME models. The MM-AE models use a PFC (power factor corrected) charger, which is 85% efficient and uses the same charger topology for all Magnum models. Available in 600- and 1200-watt models with 12VDC input and 1500-watt models with 24VDC input. The MM Series inverters are powerful, easy-to-use and cost-effective. 2-year warranty. Dimensions: 16.6 x 8.4 x 4.7 inches. ETL Listed to UL/cUL 458 for marine and mobile use.

ME-Series 12V Inverters

The ME Series 12VDC inverter/charger is designed specifically for RV use. The power-factor-corrected battery charger efficiently charges your batteries even at low AC voltage from low-cost generators, while the modified sine wave inverter keeps the cost down. Additionally, the battery temperature sensor works with the charger for optimum battery charging. It comes in three power levels. ME is ETL Listed to UL/cUL 458 for RV, marine and mobile use. 3-year warranty. Dimensions: 16.6 x 8.4 x 4.7 inches.

RD-Series 12V and 24V Inverters

The RD Series inverter/charger is designed specifically for off-grid use. It is built in the same chassis as the MS sine wave inverters. The power-factor-corrected battery charger efficiently charges your batteries even at low AC voltage from low-cost generators, while the modified sine wave inverter keeps the cost down. Additionally, the battery temperature sensor works with the charger for optimum battery charging. The RD inverters are ETL Listed to UL 1741. 2-year warranty. Dimensions: 16.6 x 8.4 x 4.7 inches.

Magnum model	Continuous watts	Battery voltage	AC out volts/ hertz	No load draw	Charger amps	Peak AC surge	Weight (lbs)	Item code	Price
MM612-AE	600	12VDC	120V/60Hz	10W	30	1100W	14	**030-02302**	**$599**
MM1512-AE	1500	12VDC	120V/60Hz	16W	70	2100W	20	**030-02306**	**$899**
MM1524-AE	1500	24VDC	120V/60Hz	16W	35	2650W	20	**030-02303**	**$939**
ME2012	2000	12VDC	120V/60Hz	12W	100	3700W	38	**030-02305**	**$1,399**
ME2512	2500	12VDC	120V/60Hz	13W	120	5000W	42	**030-02311**	**$1,599**
ME3112	3100	12VDC	120V/60Hz	13W	160	6000W	45	**030-02315**	**$1,849**
RD2212	2200	12 VDC	120V/60Hz	12W	110	3200W	38	**030-02326**	**$1,459**
RD1824	1800	24 VDC	120V/60Hz	13W	50	4000W	38	**030-02322**	**$1,289**
RD2824	2800	24 VDC	120V/60Hz	15W	80	6000W	42	**030-02324**	**$1,679**
RD3924	3900	24 VDC	120/V/60Hz	15W	105	9000W	45	**030-02328**	**$1,979**

Magnum Accessories and Options

The optional ME-RC remote control is simple to use, yet allows all the set-up features of the ME, MS, MS-ME, and RD Series inverters. The ME-RC also has the option of controlling the ME-AGS automatic generator start using a network connection to the inverter. This remote has convenient finger-tip operation, including the new one-knob programming. The new ME-ARC advanced remote offers even more control of the inverter setup.

The optional Auto Generator Start (AGS) module automatically starts and stops most major generator brands, including Onan, Powertech, Generac and Weterbeke. Check for specific model compatibility based on temperature or battery voltage. The generator can automatically start based on low battery voltage or the inside temperature of a cabin or RV. The temperature start feature will start a generator to run an air conditioner when the inside temperature of an RV or cabin rises to a user-settable level. The network version of the AGS comes with a cable that plugs into the network port of the inverter.

The optional ME-SSI allows series connection of two inverters. The MS Series accessories work with the ME and RD Series as well, except where noted. The optional ME-SSI allows series connection of two MS, MS-AE, ME, or RD inverters. The ME-SSI is not for use with MM-Series inverters. Reports battery percentage SOC, amps, voltage, amp hours and min/max DC volts.

ME-BMK monitors battery state-of-charge (SOC) and then provides this information in an easy-to-understand display via the ME-RC remote. Kit includes a sense module, shunt and wiring. The MM-RC is for the MS, MS-AE, MMS inverters. It provides on/off control and a quick indication of inverter and charger operation. (Prices on opposite page.)

NEW MMP Mini Magnum Panel

The MMP – Mini Magnum Panel is an inclusive, easy-to-install panel designed to work with one Magnum MS-AE, MS, RD or other non-Magnum inverter/charger. The MMP features a small footprint and comes prewired for fast installation. Circuit breakers and the optional remote control mount on the front of the cabinet. Dimensions are 12.5" wide x 18" tall x 8" deep. They are ETL listed to UL 1741 and CSA C22.2 107-01. Each MMP includes One DC breaker – 175A or 250A, One AC bypass breaker – 30A dual pole or 60A single pole, One AC input breaker – 30A dual pole or 60A single pole, a 500A/50mv shunt, DIN rail provided for up to eight DC mini breakers. Panels are available for inverters with 120 VAC output and 120/240 VAC output.

Magnum model	DC Main Breaker	AC Output Breaker	Use with	Item code	Price
MMP250-30D	250	30A @120/240VAC	MS4024-AE	**030-02380**	**$689**
MMP250-60S	250	60A @ 120VAC	MS4024, MS2812, MS2012, RD3924, RD2212 and all ME models	**030-02381**	**$689**
MMP175-30D	175	30A @120/240VAC	MS4448-AE	**030-02382**	**$689**
MMP175-60S	175	60A @ 120VAC	RD2824, RD1824	**030-02383**	**$689**

NEW! MP Magnum Panel

The MP Magnum Panel is available in three sizes and each size is available with either a 30-amp two-pole 120/240 VAC output breaker or a 60-amp 120 VAC output breaker.

The MPX - Magnum Panel Extension allows additional inverters to be installed on Magnum MP panels. Each MPX includes AC/DC circuit protection and wiring.

The MPSL – Magnum Panel, Single Enclosure, Low Capacity – is designed to accommodate a maximum of 2 inverters. If used with two inverters, an MPX Extension Box is required. The MPSL includes one 2850A DC breaker, one 125A AC bypass breaker, a 500A/50mv DC shunt and inverter AC input protection and all AC/DC wiring for dual inverters (source/load wiring not included).

The MPSH – Magnum Panel, Single Enclosure, High Capacity – is designed to accommodate a maximum of three inverters. One inverter can be connected directly to the MPSH. Each additional inverter requires an MPX. The MPSH includes one 250A DC breakers one 125A AC bypass breaker, a 1000A/100mv DC shunt and inverter AC input protection and all AC/DC wiring for dual inverters (source/load wiring not included).

The MPDH – Magnum Panel, Dual Enclosure, High Capacity – is designed to accommodate as many as four inverters with two enclosures – one for AC connections and one for DC connections. Two inverters can be connected to the MPDH. The third and fourth inverter require one MPX for each. The MPDH includes two 250A DC breakers one 125A AC bypass breaker, a 1000A/100mv DC shunt and inverter AC input protection and all AC/DC wiring for dual inverters (source/load wiring not included).

Magnum model	DC main breaker quantity	Main breaker spaces	AC bypass breaker	Item code	Price
MPSL-30D	1	1	60 A	**030-02384**	**$899**
MPSL-60S	1	2	60 A	**030-02385**	**$899**
MPSH-30D	1	3	125 A	**030-02388**	**$1,569**
MPDH-30D	2	4	125 A	**030-02389**	**$2,469**
MPX-30D	Extension Box w/30A dual pole AC input breaker			**030-02392**	**$329**
MPX-60S	Extension Box w/60A single pole AC input breaker			**030-02393**	**$329**
BP-S	Back Plate Single (fits 1 - MMP, MPSL, MPSH, MPX)			**030-02394**	**$99**
BP-D	Back Plate Double (fits 1 - MPDH)			**030-02395**	**$169**
BP-MMP	Back Plate MMP (fits 1 - MMP)			**030-02396**	**$99**
MPX-CB	Panel Extension Conduit Box (conduit box only – no AC or DC breakers, no wiring)			**030-02397**	**$89**
MP-HOOD	Panel Hood (included in MMP, MPSL, MPSH, MPDH)			**030-02398**	**$29**

Suggested retail prices are subject to change; check with us for latest pricing.

Silent Power

NEW! SP4024 Sine Wave Inverter/Charger

The Silent Power SP4024 integrated inverter/charger system with GenClean technology, is a 4000 watt, pure sine wave inverter designed for off-grid operation. It combines high frequency light-weight electronics to generate a sine wave, with patented 2.5X high-surge capability. A number of patented features lessen the requirements of the backup generator by removing the surge demand from the generator and allowing the batteries to handle momentary surge requirements. GenClean technology uses independent battery charging electronics to clean and regulate the sine wave of the backup power source, allowing the SP4024 to simultaneously charge the batteries and supply conditioned, pure sine wave power to the home. Accepts 120V or 240V generator input.

The integrated design minimizes the balance of system costs and hassles, and simplifies installation by including an advanced user interface, generator controller, DC disconnect breaker, DC current shunt, AC disconnect breaker, and a wall mount ready design that eliminates the need for a separate power distribution panel for nearly all installations

The advanced remote user interface, included with the inverter, provides a bright, easy-to-read two line display, with intuitive installation and startup process. The interface includes simple end-user operations to monitor performance, including a "battery gas gauge" which indicates battery charging level and amp hours from full. The interface includes non-volatile memory to store system parameters to eliminate the need to re-enter data after powering down.

CSA listed to UL-1741 standard for U.S. and Canada. Standard 2-year warranty with an available 5-year extended warranty. Dimensions: 17 x 25 x 10.5 inches. 56 pounds. Field serviceable without removal.

Made in the U.S.A.

Model	Battery volts	AC Output volts / hertz	Continuous watts	Charger max amps	Weight (lbs)	Item code	Price
SP4024	24	120/60	4000	125	56	**030-07189**	**$4,990**

Morningstar

SureSine 300W Inverters

The Morningstar SureSine pure sine wave inverter is designed to meet the needs of rural PV electrification requiring AC power for solar home systems, schools, community centers and health clinics. This inverter is also a good choice for small PV systems for telecom, remote cabins and weekend homes, and RV/caravans and boats. It has outstanding surge capability for a small inverter. The SureSine handles a 200% surge during load start-up, to a maximum of 600 watts.

The SureSine uses epoxy encapsulation, conformal coating, stainless steel hardware, and an anodized aluminum enclosure to protect against harsh tropical and marine environments. AC output connection does not have an AC receptacle so it needs to be hardwired. 2-year warranty.

Dimensions are 8.4 x 6 x 4.1 inches. The 115V inverter is UL Listed for the U.S. and cUL Listed to CSA C22.2 No. 107.1-01 for Canada.

Morningstar model	Continuous watts	Battery voltage	AC out volts/hertz	No load draw	Standby draw	Peak AC watts	Wt (lbs)	Item code	Price
SI-300-115VUL	300	12VDC	115/V/60Hz	450mA	55 mA	600	10	**030-08022**	**$308**
SI-300-220V	300	12VDC	220V/50Hz	450mA	55 mA	600	10	**030-08033**	**$308**

Suggested retail prices are subject to change; check with us for latest pricing.

Samlex

Sine Wave Inverters

Samlex sine wave inverters offer a low-cost, high-quality small sine wave inverter for remote homes, RVs and boats. The output is overload protected. All of these inverters have AC receptacles and low-battery alarms. 120 VAC output. If you plan to use these inverters with reactive load, such as motors and compact fluorescent lights or other ballasted light, size the inverter for 4 times the continuous watts required. 1-year warranty.

Samlex model	Battery voltage	Continuous watts	Surge watts	Dimensions (inches)	Weight (lbs)	Item code	Price
PST-15S-12A	12V	150	250	2.4 x 4.7 x 7.4	2.6	**030-07123**	**$169**
PST-30S-12A	12V	300	500	4.7 x 11.22 x 2.4	3.9	**030-07126**	**$195**
PST-60S-12A	12V	600	1000	9.3 x 13.2 x 3.3	6.6	**030-07129**	**$399**
PST-100S-12A	12V	1000	1500	9.3 x 15.5 x 3.3	8.8	**030-07130**	**$649**
S-1500-112B2	12V	1500	2000	15.4 X 10.8 X 4.1	15.4	**030-07131**	**$899**
PST-60S-24A	24V	600	1000	9.3 x 13.2 x 3.3	6.6	**030-07132**	**$334**
PST-100S-24A	24V	1000	1500	9.3 x 15.5 x 3.3	8.8	**030-07134**	**$575**
S1500-124B2	24V	1500	2000	15.4 X 10.8 X 4.1	15.4	**030-07135**	**$985**
S1500-148B2	48V	1500	2000	15.4 X 10.8 X 4.1	15.4	**030-07148**	**$985**

Exeltech

XP Series Sine Wave Inverters

Exeltech XP inverters are the most affordable, high-performance true sine wave inverters on the market. They feature sophisticated protection circuitry, making them immune from damage by overloads, short circuits, overtemperature and input polarity reversal. XP series are excellent for telecommunications, audio recording equipment, or any loads that require an excellent waveform. Efficiency = 87-89% (distortion <2%). Exeltech XP inverters can run on the high charging voltages needed to charge alkaline batteries. 120 VAC output. 1-year warranty.

XP 125

XP 250

XP 600

XP 1100

Model	Battery voltage	Continuous watts	No load watts	Dimensions (inches)	Weight (lbs)	Item code	Price
XP 125 Series							
XP125/12	12V	125	5	4.65 x 2 x 6.75	2.3	**030-06021**	**$370**
XP125/24	24V	125	5	4.65 x 2 x 6.75	2.3	**030-06024**	**$370**
XP125/48	48V	125	5	4.65 x 2 x 6.75	2.3	**030-06025**	**$440**
XP125/120	120V	125	5	4.65 x 2 x 6.75	2.3	**030-06026**	**$440**
XP 250 Series							
XP250/12 LI	12V	250	6	5.23 x 2.77 x 10.38	5	**030-06027**	**$672**
XP250/24 LI	24V	250	6	5.23 x 2.77 x 10.38	5	**030-06030**	**$672**
XP250/48	48V	250	8	5.23 x 2.77 x 10.38	5	**030-06032**	**$740**
XP250/120	120V	250	8	5.23 x 2.77 x 10.38	5	**030-06035**	**$740**
XP 600 Series							
XP600/12	12V	600	5	7.7 x 3.6 x 11.77	6.5	**030-06041**	**$938**
XP600/24	24V	600	5	7.7 x 3.6 x 11.77	6.5	**030-06043**	**$938**
XP600/48	48V	600	5	7.7 x 3.6 x 11.77	6.5	**030-06045**	**$1,020**
XP600/120	120V	600	5	7.7 x 3.6 x 11.77	6.5	**030-06048**	**$1,020**
XP 1100 Series							
XP1100/12 LI	12V	1100	10	7.7 x 3.6 x 14.77	12	**030-06072**	**$1,224**
XP1100/24 LI	24V	1100	10	7.7 x 3.6 x 14.77	12	**030-06078**	**$1,224**
XP1100/48	48V	1100	20	7.7 x 3.6 x 14.77	12	**030-06075**	**$1,464**
XP1100/120	120V	1100	20	7.7 x 3.6 x 14.77	12	**030-06080**	**$1,464**

Samlex

Modified Sine Wave Inverters

Samlex modified sine wave inverters are a value-priced solution to mobile power requirements. They provide modified sine wave output with over voltage, under voltage, overload and thermal protection, and low-voltage alarm. Samlex 1000-, 1500- and 2500-watt inverters have dual LED bar graph meters indicating battery current and voltage. Cigarette plug included only on 140 and 300. Larger units need to be hardwired to battery. If you plan to use these inverters with reactive loads, such as motors and compact fluorescent lights or other ballasted lights, size the inverter for 4 times the continuous watts required. 1-year warranty.

Model	Battery voltage	Continuous watts	Surge watts	Dimensions (inches)	Weight (lbs)	Item code	Price
SI-175HP	12V	175	300	1.6 x 4.7 x 5.4	1.8	**030-07220**	**$40**
SI-400HP	12V	400	600	2.4 x 6.3 x 6.3	2.9	**030-07223**	**$67**
SI-750HP	12V	750	1500	2.4 x 6.3 x 11.4	5.3	**030-07227**	**$164**
PSE-12125A	12V	1250	2500	3.5 x 9.4 x 12.3	8	**030-07229**	**$366**
PSE-12175A	12V	1750	3500	3.5 x 9.4 x 17	10	**030-07232**	**$470**
PSE-12275A	12V	2750	4500	6.3 x 9.4 x 18.2	19	**030-07235**	**$806**
PSE-24100A	24V	1000	2000	3.5 x 9.4 x 13.5	9	**030-07238**	**$448**
PSE-24150A	24V	1500	3000	3.5 x 9.4 x 18.2	12.4	**030-07241**	**$530**
PSE-24250A	24V	2500	4500	6.3 x 8.5 x 19.5	22	**030-07244**	**$866**

Schneider Electric (*formerly* Xantrex)

Xantrex TR Trace Series Inverter/Charger

Based on the proven technology of the Trace DR Series, the Xantrex TR Trace Series Inverter/Charger is an economical power conversion solution designed to provide dependable modified sine wave electricity to essential circuits in the home or business during a power outage. It can also be used in conjunction with a generator or any renewable energy source in an off-grid application. In addition to providing new features, the TR Series improves on the key features that have made the DR Series the most robust and reliable inverter/charger line for backup power and off-grid applications.

The front panel features an ON/OFF membrane switch, status indicator LEDs and a digital display that shows kilowatts when inverting and amps when charging. Other controls are protected by a snap-on cover that prevents settings from being accidentally changed.

Schneider model	Battery volts	AC volts/ hertz	Continuous watts	Charge amps	Weight (lbs)	Item code	Price
Xantrex TR Trace Series Domestic Voltage Inverters							
TR1512	12	120/60	1500	70	40	**030-01301**	**$880**
TR2412	12	120/60	2400	100	42	**030-01305**	**$1,145**
TR1524	24	120/60	1500	35	40	**030-01303**	**$880**
TR2424	24	120/60	2400	70	45	**030-01307**	**$1,145**
TR3624	24	120/60	3600	70	45	**030-01309**	**$1,425**
Xantrex TR Trace Series Export Voltage Inverters							
TR1512E	12	230/50	1500	70	42	**030-01312**	**$1,000**
TR1524E	24	230/50	1500	35	42	**030-01313**	**$1,000**
TR2424E	24	230/50	2400	70	42	**030-01315**	**$1,250**
Xantrex TR Trace Series Accessories							
TR-CB	Conduit box for DR series				5	**030-01318**	**$250**
TR-RC	Remote on/off switch w/LED indicator				2	**030-01316**	**$150**

Power factor corrected (PFC) charging, combined with a more sophisticated multi-stage battery charging algorithm, reduces electricity draw and generator run-time during generator-powered battery charging and its outstanding thermal performance allows full inverter output power to 50°C (122°F) without de-rating. A temperature sensor is included. High surge capacity starts more difficult loads and handles overload conditions reliably. Domestic voltage inverters can be series stacked for 120/240 VAC output using the cable supplied with each inverter. The TR has a durable powder-coated, corrosion-resistant steel chassis and its circuit boards are conformally coated to protect them from corrosion for longer life and improved reliability.

Optional accessories include a remote on/off switch with an LED status indicator and a conduit box that connects to the DC side of the inverter and accepts ¾-inch, 1-inch or 2-inch conduit.

Suggested retail prices are subject to change; check with us for latest pricing.

Schneider Electric

T-240 Autotransformer

Use this to power 240-volt appliances on 120-volt inverters. Indoor enclosure, steel powder-coated white. Maximum load is 4.5 kilowatts. (For smaller or larger loads, see the toroid autotransformers below. Consumes 12 watts at idle. Includes 2-pole 25-amp QOU circuit breaker/disconnect and has room for 3 other QOU AC breakers. #14 to #2 hookup wire size. Dimensions: 6.3" x 21" x 7". UL Listed. 2-year warranty.

Schneider model	Description	Item code	Price
T240	4 kW autotransformer	**030-01402**	**$650**

Toroid Autotransformers

These AC step-up and step-down transformers are greater than 98% efficient and cause less than 0.2% idle loss at no load. Nearly silent when operating. Use an autotransformer as a step-down to connect the 240V output of a generator to the 120V input on an inverter. This allows full output power of a 240V generator to be used for battery charging. Autotransformers can step-up voltage to operate 240V appliances and motors from the 120V output of an inverter. NEMA 3R enclosure with knockouts for conduit. 2-year warranty.

Description	Dimensions (inches)	Item code	Price
2.5 kW autotransformer	8 x 8 x 4	**038-09437**	**$400**
4 kW autotransformer	10 x 10 x 4	**038-09440**	**$500**
8 kW autotransformer	12 x 10 x 6	**038-09445**	**$825**

OutBack

PSX-240 Autotransformer

The OutBack PSX-240 autotransformer can be used for step-up, step-down, generator and split phase output balancing or as a series stacked inverter to load balancing auto-former. ETL Listed.

OutBack model	Description	Item code	Price
PSX-240	4 kW autotransformer	**030-04429**	**$539**

Samlex

DC Step-Down Power Converters

These DC-DC converters are designed to decrease the DC voltage fed into the unit. These switching converters have a high efficiency and provide regulated 13.8 VDC output from and input of 20 -30 VDC. Use them to power 12-volt lights and appliances from a 24-volt system. 2-year warranty.

Samlex model	Output max amps	Item code	Price
SDC-15	12	**030-08720**	**$82**
SDC-23	20	**030-08725**	**$103**

Samlex

Isolated DC-DC Converters

These isolated, enclosed DC-DC converters are designed to increase, or decrease, the DC voltage fed to the unit. We have 100W, 200W, and 360W versions.

Samlex model	Input voltage	Output voltage	Output amps	Item code	Price
IDC-100B-12	20-35	12.5	8	**030-08741**	**$140**
IDC-100C-12	30-60	12.5	8	**030-08742**	**$140**
IDC-100A-24	9-18	24	4	**030-08744**	**$140**
IDC-100C-24	30-60	24	4	**030-08746**	**$140**
IDC-200B-12	20-35	12.5	16	**030-08748**	**$166**
IDC-200C-12	30-60	12.5	16	**030-08749**	**$166**
IDC-200A-24	9-18	24	8	**030-08751**	**$166**
IDC-200C-24	30-60	24	8	**030-08753**	**$166**
IDC-360A-12	9-18	12.5	30	**030-08755**	**$329**
IDC-360B-12	20-35	12.5	30	**030-08756**	**$329**
IDC-360C-12	30-60	12.5	30	**030-08757**	**$329**
IDC-360A-24	9-18	24	15	**030-08758**	**$329**
IDC-360C-24	30-60	24	15	**030-08760**	**$329**

Solar Converters DC Autotransformers

These high-efficiency DC to DC converters are bi-directional so they can be used to increase or decrease voltage. They can be used to operate 12-volt loads on a 24- or 48-volt battery system or to run a 24-volt refrigerator on a 48-volt battery system. See the table for up and down voltage and current limits. 1-year warranty.

Solar converters model	Voltage	Amps @ low voltage	Amps @ high voltage	Item code	Price
EQ 12/24-20	12/24	20	10	**038-08209**	**$262**
EQ 12/24-50	12/24	50	25	**038-08751**	**$560**
EQ 12/48-10	12/48	10	2.5	**038-08745**	**$296**
EQ 12/48-30	12/48	30	7.5	**038-08760**	**$610**
EQ 24/48-10	24/48	10	5	**038-08748**	**$296**
EQ 24/48-30	24/48	30	15	**038-08754**	**$610**