

CHARGER CONTROLLER / REGULATORS

Why you need a Controller

The main function of a controller or regulator is to fully charge a battery without permitting overcharge while preventing reverse

current flow at night. If a non-self-regulating solar array is connected to lead acid batteries with no overcharge protection, battery life will be compromised. Simple controllers contain a transistor that shunt the PV charging circuit, terminating the charge at a pre-set high voltage and, once a pre-set reconnect is reached, opens the shunt, allowing charging to resume. More sophisticated controllers utilize pulse width modulation (PWM) or maximum power point tracking (MPPT) to assure the battery is being fully charged. The first 70% to 80% of battery capacity is easily replaced, but the last 20% to 30% requires more attention and therefore more complexity.

How controllers work and available options

The circuitry in a controller reads the voltage of the batteries to determine the state of charge. Designs and circuits vary, but most controllers read voltage to control the amount of current flowing into the battery as the battery nears full charge. Features of a controller to consider include:

- Reverse current leakage protection – by disconnecting the array or using a blocking diode to prevent current loss into the solar modules at night.
- Low-voltage load disconnect (LVD) – to reduce damage to batteries by avoiding deep discharge.
- System monitoring - analog or digital meters, indicator lights and/or warning alarms.
- Overcurrent protection – with fuses and/or circuit breakers
- Mounting options – flush mounting, wall mounting, indoor or outdoor enclosures.
- System control – control of other components in the system; standby generator or auxiliary charging system, diverting array power once batteries are charged, transfer to secondary batteries.
- Load control – automatic control of secondary loads, or control of lights, water pumps or other loads with timers or switches



- Temperature compensation – utilized whenever batteries are placed in a non-climate controlled space. The charging voltage is adjusted to the temperature.
- Pulse Width Modulation (PWM) – an efficient charging method that maintains a battery at its maximum state of charge and minimizes sulfation build-up by pulsing the battery voltage at a high frequency.
- Maximum Power Point Tracking (MPPT) – a new charging method designed to extract the most power possible out of a solar module by altering its operating voltage to maximize the power output.

Sizing a Controller

Some systems require most of these functions, others require only one or a certain combination. Your KSI dealer can help you select a unit to meet your specific needs.

Charge controllers are rated and sized by the array current and system voltage. Most common are 12, 24, and 48-volt controllers. Amperage ratings run from 1 amp to 60 amps, voltages from 6-60 volts.

For example, if one module in your 12-volt system produces 7.45 amps and two modules are utilized, your system will produce 14.9 amps of current at 12 volts. Because of light reflection and the edge of cloud effect, sporadically increased current levels are not uncommon. For this reason we increase the controller amperage by a minimum of 25% bringing our minimum controller amperage to 18.6. Looking through the products we find a 20-amp controller, as close a match as possible. There is no problem going with a 30-amp or larger controller, other than the additional cost. If you think the system may increase in size, additional amperage capacity at this time should be considered.

xantrex™

C Series Controllers

C-Series: Multifunction DC Controller

The C40 has long been the mainstay of our charge controller lineup, its versatility and reliability have made it an industry standard. Now the C40 is joined by two companion controllers, the C35 and C60. All three of these are full solid state, PWM microprocessor-driven controllers and are UL and cUL listed. C Series controllers may be configured for PV battery charging, or DC load control or DC diversion operation. Whatever the charging source, a C Series controller is sure to meet your DC controller needs. Two year warranty.

Product Name and Description	Part Number	Voltage	Max Amperage	Shipping Weight (lbs.)	Price
C-35	33701	12V or 24V	35	3.0	\$119.00
C-40	33710	12V, 24V, 48V	40	3.5	\$159.00
C-60	33706	12V or 24V	60	3.5	\$199.00



Xantrex C-40

C-Series Options

The optional LCD display shows volts, amps, and cumulative amp-hours for a solar array or DC loads. The unit can be mounted on the controller (CM) itself or located 50 or 100 feet (CUR) away in a double gang switchbox. Two year warranty.

Product Name and Description	Part Number	Voltage	Shipping Weight (lbs.)	Price
CM	33702	C Series Monitor Option	2.0	\$99.00
CMR/50	33703	Remote Monitor - 50 ft. cable	2.0	\$126.00
CMR/100	33704	Remote Monitor - 100 ft. cable	3.0	\$146.00
BTS/15	53037	Battery Temp. Sensor - 15 ft. cable	1.0	\$29.00
BTS/35	53063	Battery Temp. Sensor - 35 ft. cable	2.0	\$32.00

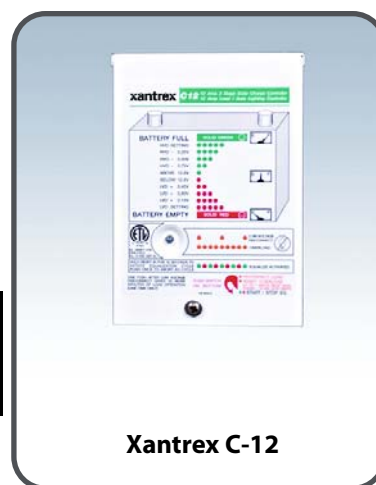


CUR/50, 100

Model C-12 Charge/Load Controller

Sophisticated, compact, 12 volt, 12-amp controller/ timer that utilizes 100% solid state, adjustable low voltage disconnect and reconnect (with reset buttons) and Pulse Width Modulated (PWM) charging. Standard features include a tri-color LED battery monitor, status indicator for over-temperature, overload and low voltage disconnect. ETL approved. The C-12 is perfect for use in automatic lighting systems and controlling small photovoltaic systems. Two year warranty.

Product Name and Description	Part Number	Voltage	Max Amperage	Shipping Weight (lbs.)	Price
C-12	33722	12V	12	2.0	\$110.00



Xantrex C-12



Morningstar Controllers

ProStar Charge Controllers

Morningstar has just upgraded their very popular ProStar line of pulse width modulated (PWM) charge controllers to include several new features. The new design is still dual voltage at 12 or 24 volts with an optional LCD display, but it is now available only in 15 or 30 amp capacities. Morningstar has added a 15 amp 48 volt model to the ProStar lineup that comes standard with the LCD display. A 15A/48V positive ground model (PN 34939) is available. The ProStar's LCD display still shows battery voltage, array amperage and load amperage (if applicable), but now it also shows system information when a self diagnostics test is performed as well as error codes to let you know what is going on if it detects a fault. Internal temperature compensation is still standard. These additional features make the new ProStar controllers one of the most advanced on the market. Five year warranty.

Product Name and Description	Part Number	Array/ Load Amperage	Meter	Price
PS-15	34971	15	No	\$112.00
PS-15M	34976	15	Yes	\$179.00
PS15M/48V	34991	15	Yes	\$230.00
PS-30	34958	30	No	\$152.00
PS-30M	34952	30	Yes	\$219.00
PS-15M/48V-PG	34939	15	Yes	\$239.00



Morningstar ProStar Controller

SunSaver and SunGuard Charge Controllers

The SunSaver line of controllers offers most of the same features of the ProStar line, but without the battery status LED's, automatic equalization circuit or the optional LCD display. The SunSaver is a PWM controller and is available in 12 or 24 volt models from 6 to 20 amps. Morningstar makes a variation of the SunSaver called the SunLight controller that is designed specifically for 12 or 24V lighting systems. Turn to [page 118](#) for details and pricing on the SunLight controllers. Five year warranty.

The SunGuard is the little brother of the SunSaver and it is only available in a 12V version with a 4 amp capacity. It is also a PWM controller with temperature compensation and simple 4 wire hookup. The SunGuard has a slightly lower output voltage (14.1 V) than the SunSaver and ProStar and may not be the best choice for flooded batteries that require a higher voltage. Five year warranty.



Morningstar SunSaver Controller

Product Name and Description	Part Number	Array Amperage	Load Amperage	Voltage	LVD	Price
SunSaver 6	34962	6.5	N/A	12	No	\$48.00
SunSaver 6L	34963	6.5	6	12	Yes	\$59.00
SunSaver10	34965	10	N/A	12	No	\$55.00
SunSaver 10L	34966	10	10	12	Yes	\$70.00
SunSaver 20L	34935	20	20	12	Yes	\$95.00
SunSaver 10L-24	34942	10	10	24	Yes	\$76.00
SunSaver 20L-24	34936	20	20	24	Yes	\$101.00
SunGuard 4	34931	4.5	N/A	12	No	\$30.00



Morningstar SunGuard

TriStar™ Controllers

Morningstar's TriStar Controller is a three-function controller that provides reliable solar battery charging, load control or diversion regulation. This controller operates in only one of these modes at a time but two or more controllers may be used to provide multiple functions. The TriStar uses advanced technology and automated production to provide exciting new features at a competitive cost. The controller is UL listed and is designed for both solar home systems and industrial applications. Five year warranty.



TriStar Controller

- Rated for 45A or 60A, both at 12V or 24V or 48V
- Includes RS-232 communication port for customizing controller set points or data logging
- Optional on-board digital meter and remote meter
- Designed for mechanical fit on a Xantrex power panel or OutBack PSDC
- Provides extra bending room for large wires
- 100% solid state microprocessor controller

Product Name and Description	Part Number	Voltage	Load Amperage	Price	Shipping Weight (lbs.)
TriStar-45	34995	12V, 24V, 48V	45	\$169.00	4.5
TriStar-60	34996	12V, 24V, 48V	60	\$218.00	4.5
TriStar Digital Meter	34997	-	-	\$99.00	0.5
TriStar Remote Digital Meter	34998	-	-	\$136.00	0.5
Remote Temperature Sensor	34999	-	-	\$32.00	1.0



Automatic Sequencing Charger (ASC)

Specialty Concepts, Inc.

The ASC is a very compact, efficient, 100% solid-state battery charge regulator for use in photovoltaic systems. It is available in 12-volt and 24-volt units up to 16 amps. The ASC is a negative-ground shunt regulator, housed in an anodized aluminum chassis and encapsulated in a hard epoxy resin. The terminal block accepts up to 12 gauge wire or a spade connector, providing simple installation. Shipping weight 2 lbs. Five year warranty.

- Solid state, encapsulated for high reliability.
- Low frequency, pulse charge method – no RF noise.
- UL listed, CSA, FM approved for hazardous locations.
- Optional low voltage disconnect or alarm contacts.
- 5 year warranty.
- Optional temperature compensation is on a remote sensor for accurate temperature monitoring.

Product Name and Description	Part Number	Volts	Amp Capacity	Price
ASC 12/8	32300	12.0	8.0	\$46.00
ASC 12/8A - with Temp. Comp.	32310	12.0	8.0	\$56.00
ASC 12/8AE - with Temp. Comp. Low Voltage Disconnect	32380	12.0	8.0	\$70.00
ASC 12/16	32440	12.0	16.0	\$63.00
ASC 12/16A - with Temp. Comp.	32450	12.0	16.0	\$73.00
ASC 12/16AE with Temp. Comp. Low Voltage Disconnect	32472	12.0	16.0	\$91.00
ASC 24/16	32540	24.0	16.0	\$63.00



ASC Controller

RV / Cabin Controllers

Specialty Concepts, Inc. MARK Series controllers are cost effective, flush mount, battery charge controllers with digital system monitoring. Both MARK/15 and 22 provide efficient charging while protecting the batteries from damage due to overcharging. These controllers are designed for use in mobile or stationary PV systems, and offer complete system monitoring of battery voltage, solar charging current, and charge set-point calibration. Five year warranty.

Product Name and Description	Part Number	Amp Capacity	Price
MARK/15-12	32841	15	\$129.00
MARK/22-12	32842	22	\$139.00
MARK Series Mounting Box	32961	-	\$25.00



MARK/15-12

Heliotrope

The DC3000 is a 30 amp, 12 volt DC, Series type pulse width modulated charge controller. It utilizes power MOS FET technology to eliminate relays and subsequent failures associated with them. The DC 3000 maintains the exact state-of charge (SOC) voltage by frequent on and off switching of the photovoltaic source and is actually two charge controllers in one. The DC 3000 has one circuit for the engine starting battery that is limited to 3 Amps with the SOC fixed at 13.4 volts. The house battery charging circuit can deliver up to 30 Amps with a selectable SOC from 13.2 VDC to 14.6 VDC. The Liquid Crystal Display allows you to monitor the engine battery voltage, the house battery voltage, and the solar charging amperage. Ten year limited warranty.

Product Name and Description	Part Number	Amp Capacity	Price
DC 3000	34850	30/3	\$225.00



Digital Commander DC-3000

Connect Energy

PC60 Charge or Load Controller

PC60 is field selectable for 12, 24, or 48 VDC battery systems and can operate either as a battery charge controller, or load controller, or load diversion controller rated at 60A maximum. UL listed for PV charging to 60A. Adjustable switch selections for three battery types; flooded, sealed, gell, AGM, or defeated allows user adjustable trim-pots for bulk and float mode, with manual or automatic battery equalize setting (flooded). Adjustable load-disconnect and reconnect settings, low battery LED (as load controller). Features; illuminated LCD display, for battery capacity or charge current, includes 60A DC battery or PV circuit breaker, conduit-ready enclosure, wire screw terminal lugs for #1/0 AWG. Five year warranty.

The PC60 comes standard with an integrated digital meter. With the touch of a button the PC60 displays the system's operational status on an illuminated LCD screen.

Metering Features

- Charging stage (Bulk, Float, Equalization)
- Charge set-points (Bulk, Float)
- Input voltage, battery voltage
- Input amps, input amps (max), input watts
- Input amp-hours today, total input amp-hours accumulated
- Equalization start / stop (for flooded batteries only)

Product Name and Description	Part Number	Shipping Weight (lbs.)	Price
PC60	33804	6.6	\$329.00



PC60

Blue Sky Energy Solar Boost™

The Solar Boost™ PV charge controllers utilize a patented Maximum Power Point Tracking (MPPT) charging algorithm that allows the controller to get up to 30% more power out of your solar modules under certain conditions (low battery voltage and cool temperatures). The Solar Boost 50, 3048 and 6024H have an automatic 3-stage battery control system. This controller also has a pulse width modulated (PWM) control configuration. As an option the controller has a digital display that shows battery voltage, solar current, output charge current, charge mode and state of charge. The remote panel can be mounted on the front of the controller or up to 300 feet away. The SB50 can be set up to charge a 12 volt battery from a 24 volt array, while the SB3048 can be set up to charge a 24 volt battery from a 48 volt array. The SB6024H must use a 36 volt or 48 volt array to charge a 12 volt or 24 volt battery. This can reduce your PV-to-battery wire size. SB50, 3048 and 6024H are listed to UL1741, CSA standards, and are CE labeled for sales in the European Union. 36 month warranty.

	Solar Boost 50	Solar Boost 3048	Solar Boost 3024i	Solar Boost 2000E	Solar Boost 6024H
Output Current Rating (Amps)	50.0	30.0	30.0	25.0	60.0
System Voltage (Volts)	12/24	24/48	12/24	12	12/24
Standby Current (Milliamps)	30.0	30.0	30.0	17.0	30.0
Charge On Current (Milliamps)	150.0/90.0	100.0/70.0	100.0/70.0	70.0	150.0/90.0
Power Conversion Efficiency	97% @ 40A	97% @ 25A	97% @ 25A	95% @ 15A	96% @ 50A
PV Maximum Open Circuit Voltage (Volts)	57	140	140	30	140
Acceptance Voltage Adjust Range (Volts)	13-16/26-32	26-32/52-64	13-16/26-32	13-16	13-16/26-32
Cabinet Dimensions (H x W x D) (in)	10.0 x 8.75 x 3.5		7 x 6.5 x 3.5	4.63 x 6.38 x 1.88	10.0 x 8.75 x 3.5
Remote Display Dimensions (H x W x D) (in)	4.5 x 4.5 x 1.75		N/A	N/A	4.5 x 4.5 x 1.75

Product Name and Description	Part Number	Price
SB50L - 12/24V Controller	33743	\$419.00
SB50DL - Controller with display	33755	\$499.00
SB50PDL - Front panel display	33738	\$115.00
SB2000E - 12V Controller	33745	\$229.00
SB2000E Wall Mount Box	33744	\$28.00
SB3024i - 12/24V Controller	33725	\$299.00
SB3048L - 24/48V Controller	33742	\$479.00
SB3048DL - Controller with display	33749	\$559.00
SB3048PDL - Front panel display	33737	\$115.00
SB6024HL - 12/24V Controller	33739	\$509.00
SB6024HDL - Controller with display	33756	\$589.00
SB6024PDL - Front panel display	33758	\$115.00
SB50RD25 - Remote display, 25' cable, for SB50, 3048 and 6024H	33747	\$109.00
20' Battery Temperature Sensor	33741	\$28.00
IPN-ProRemote - Full featured remote display with complete system setup and control capability	33726	\$199.00
IPN-Remote - Basic remote display without setup capability	33727	\$169.00



SB50DL



SB2000E



OutBack MPPT Charge Controller

MPPT Charge Controller

The OutBack MX60 Maximum Power Point Tracking (MPPT) charge controller enables your PV system to achieve its highest possible performance. Rated for up to 60 amps of DC output current, the MX60 can be used with battery systems from 12 to 60 VDC with PV open circuit voltage as high as 140 VDC. The MX60's set points are fully adjustable to allow use with virtually any battery type, chemistry and charging profile. The MX60 allows you to use a higher output voltage PV array with a lower voltage battery. This reduces wire size and power loss from the PV array to the battery / inverter location and can maximize the performance of your PV system.

The MX60 comes standard with an easy to use and understand display of the PV system's performance. The four line, 80 character, back-lit LCD display is also used for programming and monitoring of the system's operation, including built-in data logging with 64 days of memory.

The MX60 can also be connected to the OutBack MATE system controller and display to allow monitoring of up to eight MX60 controllers from a location up to 1000 feet away. The MATE also includes an opto-isolated RS232 port for connection to a PC for data logging and system monitoring. See [page 91](#) for more information on the MATE.



MX60

Model Number	MX60
Part Number	55295
Price	\$649.00
<i>Output Current Rating</i>	60.0 Amps DC Maximum at 12, 24, or 48 VDC
<i>Nominal Battery Voltage</i>	12, 24, 32, 36, 48, 54, or 60 VDC
<i>PV Maximum Open Circuit Voltage</i>	140 VDC
<i>Standby Power Consumption</i>	Less than 1 Watt typical
<i>Charging Regulation Methods</i>	Five Stage: Bulk, Absorption, Float, Silent, Equalization
<i>Charging Regulation Set Points</i>	13 - 80 VDC
<i>Equalization Voltage</i>	Adjustable 1.0 to 5.0 VDC above Bulk Setpoint
<i>Temperature compensation</i>	Programmable slope -2.0mV/oC/Cell to -5.0mV/oC/Cell
<i>Voltage Step-Down Capability</i>	Can change a 12 or 24 VDC battery from a 48V nominal PV array
<i>Power Conversion Efficiency</i>	99.1% @40A, 97.3% @60A
<i>Digital Display</i>	4 line 80 character backlit LCD Display
<i>Remote Interface</i>	RJ45 Modular Connector CAT 5 Cable 8 wire
<i>Operating Temperature Range</i>	-40 to 60 °C Power derated above 25 °C
<i>Environmental Rating</i>	Indoor Type 1
<i>Conduit Knockouts</i>	Two 3/4 - 1" on the back; One 1" - 1 1/2" on each side; Two 1" 1/2" on the bottom
<i>Warranty</i>	Two years parts and labor / optional extended warranty
<i>Dimensions (HxWxD) (in)</i>	Enclosure: 14.5 x 5.75 x 5.75 / Shipping Box: 17.75 x 10 x 7
<i>Shipping Weight (lbs.)</i>	15.0

OutBack Charge Controller Accessory

Product Name and Description	Part Number	Shipping Weight (lbs.)	Price
RTS - Outback Remote Temperature Sensor w/ 20' cable	55300	1.0	\$29.00



Solarix Controllers

Solar Charge Controller

Solarix solar charge controllers set new standards in solar technology. For the first time a solar charge controller is offered, equipped with an integrated circuit (ASIC) specially designed for solar charging. This integrated circuit, called Atonic, provides a charge controller with new functions. Atonic is more than a protective device for your battery, and contains the most recent and innovative technology. It contains a self-learning algorithm which gives detailed information on the battery's state of charge (SOC) and adjusts itself to the battery's age and capacity. The SOC provides a basis for all control and regulatory functions. This new type of hybrid regulator is much more efficient than conventional series and shunt regulators. The display gives information about the SOC, and faults. A combination of electronic and electro-mechanical protection increase the safety of the charge controller. Two year warranty.



Solarix Delta

More Features

- Temperature-adjusted SOC
- Optimized fast, medium and trickle charging
- 6 character LCD display
- External temperature sensor
- The SOC provides load disconnect
- Two LEDs, fixed / flashing, different colors, provide SOC and operation status
- Polarity protection
- Extremely low electromagnetic emission
- 12/24V automatic setting

Product Name and Description	Solarix Alpha	Solarix Gamma	Solarix Sigma	Solarix Omega
Part Number	62629	49403	62630	62632
\$152.10 Price	\$57.33	\$67.86	\$86.58	\$109.98
<i>Max charge current at 50°C</i>	8A	12A	20A	30A
<i>Max load current at 50°C</i>	8A	12A	20A	30A
<i>Max self consumption</i>	7mA	7mA	7mA	7mA
<i>Admissible ambient temperature</i>	-25 to 50°C	-25 to 50°C	-25 to 50°C	-25 to 50°C
<i>Connection terminal (fine/single wire)</i>	#6/4 AWG	#6/4 AWG	#6/4 AWG	#6/4 AWG
<i>Weight (lbs.)</i>	1.0	1.0	1.0	1.0
<i>Dimensions (in.)</i>	7.4 x 4.2 x 1.9	7.4 x 4.2 x 1.9	7.4 x 4.2 x 1.9	7.4 x 4.2 x 1.9
<i>Enclosure</i>	IP 22 / NEMA1	IP 22 / NEMA1	IP 22 / NEMA1	IP 22 / NEMA1
<i>System voltage</i>	12/24V	12/24V	12/24V	12/24V

SolSum™

Wear-resistant MOSFET transistors are used for the over-discharge protection in this charge controller, whereby a maintenance-free operation with an extremely long product life is ensured. Absolutely new in this price class is cycle charging, boost charging and temperature compensation which are integrated in these charge controllers. LED color display gives information about voltage of the battery bank. Two year warranty.

More Features

- Overvoltage protection
- PWM shunt regulator
- Built-in fuse
- Automatic voltage adaptation 12/24V
- Electronically circuit protected
- CE Certified
- Temperature Compensation
- Schottky diode



Solsum 6.6 & 8.8

Product Name and Description	Solsum 5.0* (with LVD)	Solsum 6.6* (with LVD)	Solsum 8.0* (with LVD)	Solsum 8.8* (with LVD)
Part Number	49423	62624	62625	62626
Price	\$24.57	\$33.93	\$33.93	\$45.63
Max charge current at 50°C	5A	6A	8A	8A
Load current at 50°C	-	6A	-	8A
Connection terminal (fine/single wire)	#14/12 AWG	#14/12 AWG	#14/12 AWG	#14/12 AWG
Weight (lbs.)	0.24	0.24	0.24	0.25
Dimensions (in.)	3.3 x 3.8 x 1.3	3.3 x 3.8 x 1.3	3.3 x 3.8 x 1.3	3.3 x 3.8 x 1.3
Enclosure	IP22 / NEMA1	IP22 / NEMA1	IP22 / NEMA1	IP22 / NEMA1
Ambient temperature	-25 to 50°C	-25 to 50°C	-25 to 50°C	-25 to 50°C
System voltage	12/24V	12/24V	12/24V	12/24V

*No load disconnect, fused only with 6.3 and 10 amp.

PR 0303 and PR 0505

The photovoltaic regulator PR 0303 and PR 0505 are well suited for small solar home systems with up to 5 amp solar and load current. The load such as lights, radios or small TVs can be manually switched off on the controller without additional wall mounted switches. Several safety features guarantee a maintenance free operation. High quality production standards according to ISO9001 and semiconductor components assure a long life time for the controller, especially in extreme climatic conditions. The regulator is optimized for use with amorphous as well as with crystalline Modules or other technologies. Two year warranty.

Product Name and Description	Part Number	Max. Load Current	Max. PV Current	System Voltage	Price
PR 0303	62627	3.0A	3.0A	12V	\$30.42
PR 0505	62628	5.0A	5.0A	12V	\$35.10



PR 0303



Solarix Tarom

Solarix Tarom

Solarix Tarom combines two new power technologies and aims to be the best quality PV controller. First, it traces down the charging status of the battery with unprecedented accuracy, this way you can manage the system yourself with the precise status indicator. Second, all the data can be transmitted into the DC-net. With this function, there is no need for additional data nets to send battery information to other installed devices. With the help of installed receivers, the deep discharge protection is decentralized by setting up different priorities. A connected monitor can be used to call back all the recorded actual system parameters. Solarix Tarom certainly offers the best quality of functions as a solar system controller.

The double-line display keeps you informed on important system parameters via status indicators. The first line permanently indicates the status of charge, battery voltage, charging and final charging current (with rough decomposition). The second line informs on the system parameters and current status with changing detailed values and descriptions by changing the display every three seconds. Two year warranty.

More Features

- By putting an additional shunt into the battery cable, the controller can register the charging status and display up to 100 amps.
- External temperature sensor optional
- Data receiver
- Will operate as a lighting controller with optional PA15



PA15 Remote Control

Product Name and Description	Part Number	Max. Load/ Operating Current	Max. Current	System Voltage	Enclosure	Connection	Dimensions HxWxD (in.)	Price	Shipping Weight (lbs.)
Solarix Tarom 235	62634	35A	45A	12/24V	IP22/NEMA1	#6/4 AWG	7.4x5.0x1.9	\$229.32	1.0
Solarix Tarom 245	62635	45A	60A	12/24V	IP22/NEMA1	#6/4 AWG	7.4x5.0x1.9	\$264.42	1.0
Solarix Tarom 430	62636	30A	40A	48V	IP22/NEMA1	#6/4 AWG	7.4x5.0x1.9	\$304.20	1.0
External Temperature Sensor	49409	-	-	-	-	-	-	\$30.50	-
Data Logger - Tarom 01- Equipped with RS232 and two analog entrances	62637	-	-	-	-	-	-	\$678.60	-
PA15 - Remote Control	62638	15A	-	-	-	-	-	\$163.80	-
PA 5200 Shunt Module	62639	-	-	-	-	-	-	\$409.50	-

SYSTEM METERS

We highly recommend installing a system meter of some kind in your renewable energy system. If you don't, it is like driving your car without a fuel gauge. There are many different types of meters available with different features so please read the information below to determine which type will best suit your needs. The bare minimum you should have in any renewable energy system is a voltage meter to approximate the state of charge on your battery bank.

Instantaneous vs. Cumulative

All of the meters that we sell provide instantaneous values of battery voltage or charging/load amperage which is better than nothing, but it still doesn't tell you the whole picture. More advanced cumulative amp-hour meters like the TM500A, Tri-Metric 2020 and Xantrex Link 10 (see following pages) provide much more detailed information regarding your system's actual state of charge. Think of these three cumulative amp-hour meters as a fuel gauge

for your system since they all tell you how much energy you have put into your battery bank versus what you have taken out. We highly recommend one of these meters for every battery based home system.

Shunts

A shunt is a very precise resistor that will produce a low voltage drop (millivolts) proportional to the amount of current flowing through it. There are several different size shunts available depending on the maximum amperage of the circuit it will be installed in and the amperage to millivolt drop ratio required by the particular meter you plan to use. For example, a 10:1 shunt will produce a 1 millivolt drop for every 10 amps of current that is flowing through it. Most meters that use an external shunt can be placed 50-100 feet away from the shunt. If any of the meters we sell require an external shunt, we say so and let you know which one to use.

Product Name and Description	Part Number	Price	Shipping Weight (lbs.)
100 Amp - 100 Millivolt	32980	\$25.00	1.0
500 Amp - 50 Millivolt	32990	\$30.00	2.0



Meters

Digital Meters

An accurate meter for monitoring battery voltage in the control room or remotely. Accuracy to a tenth of a volt, amp draw - 8 milliamps. Meter is a compact digital monitor for 12 or 24 VDC battery banks with a 40 VDC maximum. Two year warranty.

Product Name and Description	Part Number	Price	Shipping Weight (lbs.)
Digital Volt Meter	37401	\$53.00	1.0

