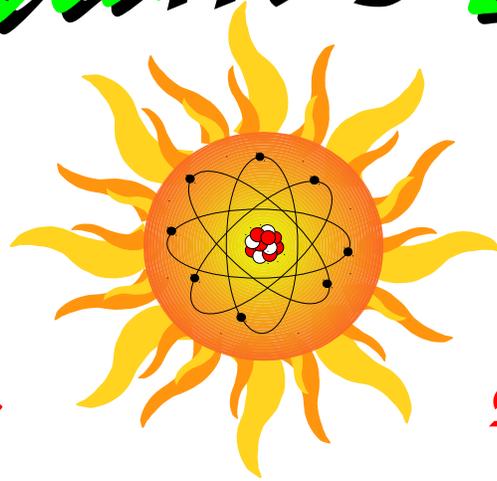


Quantum Harvest[®]

*Faraday
Enclosures*



*Portable Solar
Power Stations*

Owner's Manual

For Quantum Harvest Model 2500



quantumharvest.net

Introduction

Congratulations on your purchase of a Quantum Harvest EMP protected* portable solar power station! These units have been carefully designed and hand-crafted to provide many years of trouble-free operation. In the unlikely event of malfunction, we offer a 1 year warranty on the batteries (if provided by us.); 3 years on the inverter and charge controllers; 5 years on everything else. For warranty details, see page 34.

To obtain maximum performance and long life from your new power station, it is important to gain a basic understanding of how such units operate and their limitations. The heart of the unit, and it's main component, is the battery bank. This is where the energy from the solar panels or the included 120 volt AC battery charger is stored for later use. The particular batteries I have selected are state of the art deep-cycle Absorbed Glass Mat (AGM) medical-grade batteries, designed for powered wheel chairs. These batteries are maintenance free and can be stored and used in any position. Since they do not give off gases as they charge, there is no danger of fire and they never need to have water added.

To obtain maximum life from these, or any other batteries, it is important to try to avoid deep cycling, that is, drawing them down flat before allowing them to recharge. Sometimes this cannot be avoided, but if at all possible, strive to avoid doing so.

Another important component is the inverter. This is the device that converts the low voltage DC current from the batteries into the high voltage AC current that we are familiar with. (All Quantum Harvest power stations also have 12 volt DC receptacles and USB charging sockets for the appropriate devices, in addition to standard 120 volt AC house current.) The inverter is protected internally from overheating and low battery voltage, and externally from over-current draw by a 400 ampere ANL type fuse. The 2500 watt model will sustain a continuous 2500 watts of current, and will briefly provide up to 5000 surge watts, to start motors and other inductive loads. The inverter relies on air flow around and through the unit to cool it, therefore it is imperative that the inverter not be used with the enclosure door closed.

Another important part is the solar panels. We currently offer a choice of a 100 watt single-panel mobile assembly, as well as a 200 watt dual-panel mobile assembly, and a 300 watt, three panel assembly. All our models of power stations can also be purchased without solar panels, allowing the client to supply their own panels, if they so desire. We recommend an absolute minimum of 100 watts rated panel capacity, and 200 or even 300 watts would be better. All of our stations utilize a charge controller that will handle up to 30 amps of array current, or about 350 to 400 watts total array capacity. If unsure, email us at support@quantumharvest.net with the specifications of the proposed panels and we can quickly look them up and confirm whether or not they will work.

**A quick note on EMP*

An EMP, or Electro-Magnetic Pulse is a devastating phenomenon that, while harmless to living things, absolutely destroys anything electronic. It consists of extremely powerful electromagnetic fields building and collapsing hundreds of thousands of times per second. This induces potentially huge electric currents in anything that conducts electricity, causing components connected to said conductor to burn out. An EMP can be caused by either a deliberate, high-altitude nuclear warhead detonation, or can be caused naturally by a solar event called a Coronal Mass Ejection, or CME.

All Quantum Harvest power units are built into a specially designed enclosure, more properly called a Faraday Cage, named after Michael Faraday, an early pioneer in electromagnetic research. The purpose of a Faraday cage is to intercept and divert electromagnetic energy away from the box's interior, thus protecting the contents.

The principles involved are fairly simple, but the proper execution is critical. In order for the enclosure to be useful, it must have a door, but any opening larger than a square centimeter or so allows too much energy to penetrate the interior, thus defeating the purpose of the Faraday cage.

The solution to this conundrum is to gasket the door with a special type of conductive gasket, mated to a copper or silver strip that is electrically bonded to the main box. The key is to have very low electrical resistance between the door and the enclosure, with no gaps. This is not as easy as it sounds, and requires special materials designed specifically for this application.

My experience with Faraday apparatus comes from 8 years experience with very powerful industrial machines called RF welders. These machines use extremely powerful and focused bursts of electromagnetic energy to weld and form plastic parts. These machines basically create a local EMP every time they fire, and it is critical that stray energy be confined and dissipated safely to avoid damage to other sensitive electrical machinery.

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Base Unit Specifications

Assembled Dimensions:	49.5”H x 24”D x 19”W
Assembled Weight:	208 lbs.
Inverter:	Cobra 2500 watt Modified Sine Wave; 5000 watt surge.
Battery Bank:	6- ML35-12 AGM Deep-cycle batteries, 35 Amp/hours each.
Battery Bank Capacity:	210 Amp/hours, 2,520 Watt/hours
AC Charger:	NOCO Genius G7200 7.2 Amp Smart Battery Charger
Solar Charger/Controller:	Instapark PRS-3030 PWM 30 Amp Solar Power Charge Controller.

Solar Panel Assembly Specifications (200 Watt Model)

Assembled and folded Dimensions:	50.75”H x 6”D x 25.5”W
Unfolded Dimensions:	47.75”H x 45”W
Assembled Weight:	45.2 lbs.
Rated Output (Nominal)	Optimum Operating Voltage (Vmp): 18.9V Optimum Operating Current (Imp): 10.58 A Open - Circuit Voltage (Voc): 22.5 V Short- Circuit Current (Isc): 11.5 A Maximum Power at STC: 200 W Operating Module Temperature: -40°C to + 90°C

In this manual, the following symbols are used to highlight important facts:



Denotes circumstances where failure to follow the procedures outlined in the manual may result in property damage.



Denotes circumstances where failure to follow the procedures outlined in the manual may result in personal injury or death.

Always remember that electricity is utterly devoid of mercy and never grants second chances!

Note on Batteries

Quantum Harvest power stations are designed to use batteries that measure 7.68” Long, by 5.16” Wide by 7.13” High. The particular battery model we use is the ML35-12 - 12V 35AH model. Other models of similar dimensions and specifications will also work.



Caution Although the low voltage at the battery terminals means that electrical shock or electrocution is impossible, nonetheless, batteries store an enormous amount of potential energy, that if accidentally released by a short-circuit, can melt metal tools, start fires and cause personal injury. Eye protection **MUST BE WORN** whenever working with batteries of this size, and extreme care must be exercised at all times. Anything electrical is unforgiving of mistakes.



!Warning! Note that although the voltage at the battery terminals is insufficient to shock a person, the current coming from the inverter receptacles is 120 volt house current, and that is indeed capable of inflicting a severe, potentially fatal shock. Always be sure that extension cords are not frayed or worn, and that all equipment plugged into the inverter is in a safe condition.

Section 1: Capacities and recommended usages

This 2500 watt model is the third-largest unit we currently produce, and will reliably power anything within it's capability, including full-size refrigerators and freezers, table saws and chop saws, as well as any hand-held tools, such as drills, grinders and circular saws, etc. It will also, of course, power smaller items such as TVs, cell phones, laptops, tablets, etc.

It is NOT recommended to power large resistive loads like central air-conditioners, water heaters and electric space heaters, as well as large electric motors, such as industrial air compressors, etc.

Used within it's limits, this unit will provide many years of trouble-free service, and be a joy to own and use. But like most things, if you push it beyond it's limits, you will be plagued by expensive repairs and poor performance.

This machine contains a battery bank of six, 35 amp/hour batteries, for a total capacity of 210 amp/hrs. How much real power is that? If we multiply the 210 amp/hours by the nominal voltage (12 volts), we get a capacity of 2,520 watt/hours (watts = volts times amps). Put another way, this machine will run a 100 watt incandescent light bulb for 25.2 hours!

That may not sound like much, but incandescent bulbs are horrendously inefficient. This machine will also run a full-sized refrigerator or freezer for several days, even without the solar panels hooked up.

In my own load and endurance tests, which are still ongoing, some real-world numbers I have seen so far for the 2500 watt model are detailed below.

The first 3 tests were run without the solar panels plugged in, nor was the AC charger plugged in. These were endurance tests, and as such, were run until the batteries were exhausted.

Test 1: 10 cubic foot chest freezer, in the house, ambient temperature was between 72 to 83 degrees F, ran for 53 hours.

Test 2: Full-size (17 cubic foot) auto-defrost refrigerator, with ice maker, in the house, ambient temperature was between 71 to 82 degrees F, ran for 27 hours.

Test 3: Home theater system; 65" DLP TV, Blu-Ray player, 500 watt Surround Sound system. Average draw was 415 watts, ran continuously for 6.25 hours.

Test 4: This was an operational test. The unit was set up to power carpentry tools, including a 10" table saw, a 10" sliding cross-cut saw, and a 7" circular saw. It also had a cordless drill battery charger plugged in, and charged both batteries. The power station's batteries were at indicated 50% charge when test was started. The 200 watt solar panel assembly was deployed with good sun exposure. The tools were run as needed for a minor home remodeling project that took approximately 6 hours. By dusk, having had 10 hours of full sunlight, even running the tools, the station's batteries were indicating full charge. On the next page is a partial list of common electrical appliances and their approximate loads, provided in part by the good folks at: <http://www.energy.gov>

Appliance	Watts used	Load type R= Resistive I= Inductive	Notes	Quantum Harvest Model		
				1500	2500/2505	3000
Aquarium	50-1210	R	1	X	X	X
Clock radio	10	R	2	X	X	X
Coffee maker	900-1200	R	2	X	X	X
Clothes washer	350-500	I		X	X	X
Clothes dryer	1800-5000	R				
Dishwasher	1200-2400	R				
Dehumidifier	785	I		X	X	X
Electric blanket (Single/Double)	60-100	R		X	X	X
Fans:						
Ceiling	65-175	R		X	X	X
Window	55-250	R		X	X	X
Furnace	750	R		X	X	X
Hair dryer	1200-1875	R	3			
Heater (portable)	750-1500	R	3	X	X	X
Clothes iron	1000-1800	R	3	X	X	X
Microwave oven	750-1100	R	2	X	X	X
Personal computer (desktop w/LCD monitor)	150	R		X	X	X
Radio (stereo)	70-400	R		X	X	X
Refrigerator (frost-free, 16 cubic feet)	725	I		X	X	X
Televisions-CRT (color)						
19"	65-110	R		X	X	X
27"	113	R		X	X	X
36"	133	R		X	X	X
53" - 61" Projection	170	R		X	X	X
Flat screen	120	R		X	X	X
Toaster	800-1400	R		X	X	X
Toaster oven	1225	R	3	X	X	X
VCR/DVD	17-21 / 20-25	R		X	X	X
Vacuum cleaner	1000-1440	R	3	X	X	X
Water heater (40 gallon)	4500-5500	R		NR	NR	NR
Water pump, 1/3 to 1/2 hp (120 volt)	500-1100	I	4	X	X	X
Water pump 1/2 to 1 hp (220 volt)	1000-3000	I	4			
Water bed (with heater, no cover)	120-380	R		X	X	X

Notes: 1=Higher wattage indicates use of an aquarium heater. 2= May have difficulty with Modified sine-wave inverters
3= High power usage, but usually short duration. 4= High surge requirement for starting.

Section 2: Controls/Circuit Protection Devices

There is one main fuse, a 400 ampere ANL type fuse, shown to the right, located at the bottom of the unit. There is one spare fuse included in the spare parts kit. To replace the fuse,

first, be sure the main switch is turned off, then squeeze the clear plastic cover at the bottom to release the catches, and remove it, then, using a 9/16”

wrench, remove the two nuts. Lift the fuse out and place the new one over the studs; reapply the nuts, being careful to not over-tighten, then snap the plastic cover back in place.

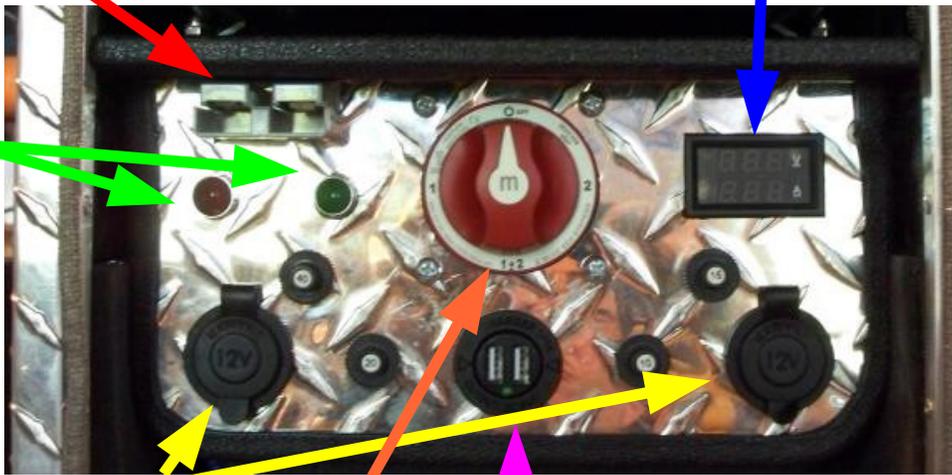


Detail of Main Control Panel

Anderson connector for booster cables

Volt/Charging amps meter

Polarity indicator LEDs for use with the booster cables (see section 5)



12 Volt DC cigarette lighter-style outlets

USB charger ports (2)

Main Switch; 4 positions available.

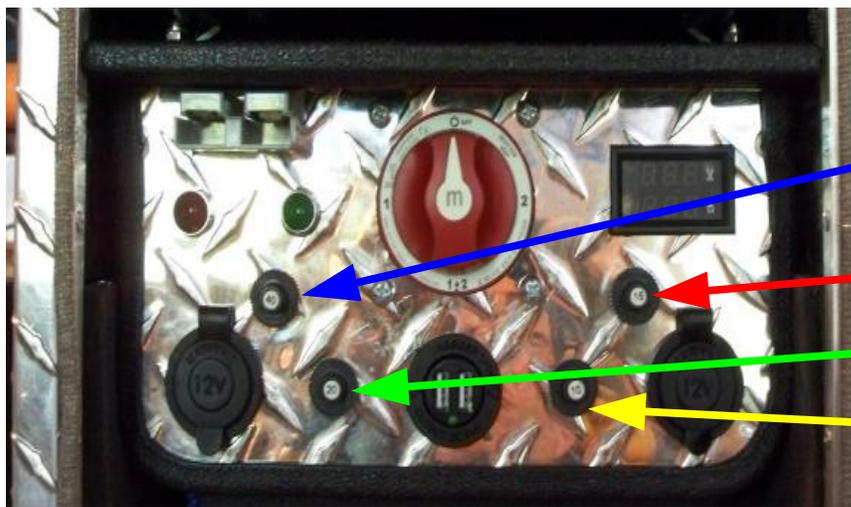
Off position isolates the inverter and control panel from the batteries.

Position #1 is the normal use position in which the unit draws from the internal battery bank.

Position #1&2 is the position used when using the booster cables, and allows the unit to run from both the internal battery bank and the vehicle's charging system.

Position #2 is not normally used, and allows the load to be run directly from an automobile's charging system, bypassing the internal battery bank.

Detail of Main Panel Circuit Breakers



40 Amp. For solar charger

15 Amp for AC charger

20 Amp for 12VDC outlets

5 Amp for USB ports

Detail of 2500 Watt Inverter



120 volt AC outlets

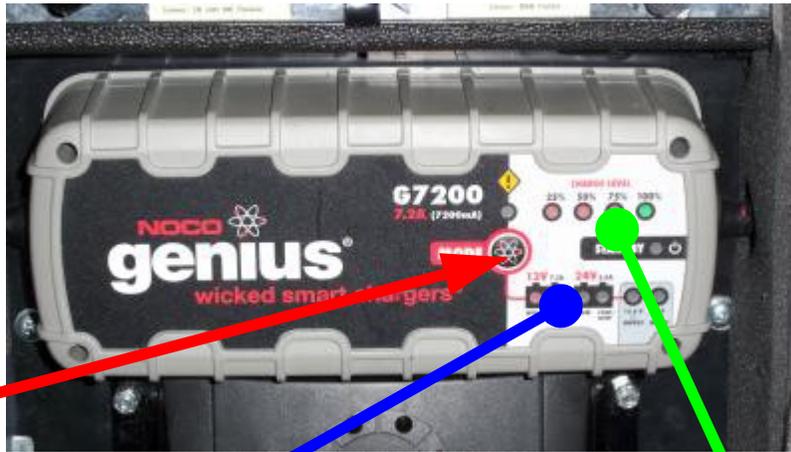
On/Off switch

Port for optional remote

USB charging port

Digital display showing battery voltage and inverter load watts

Detail of AC Charger



Mode switch

Mode indicator LEDs

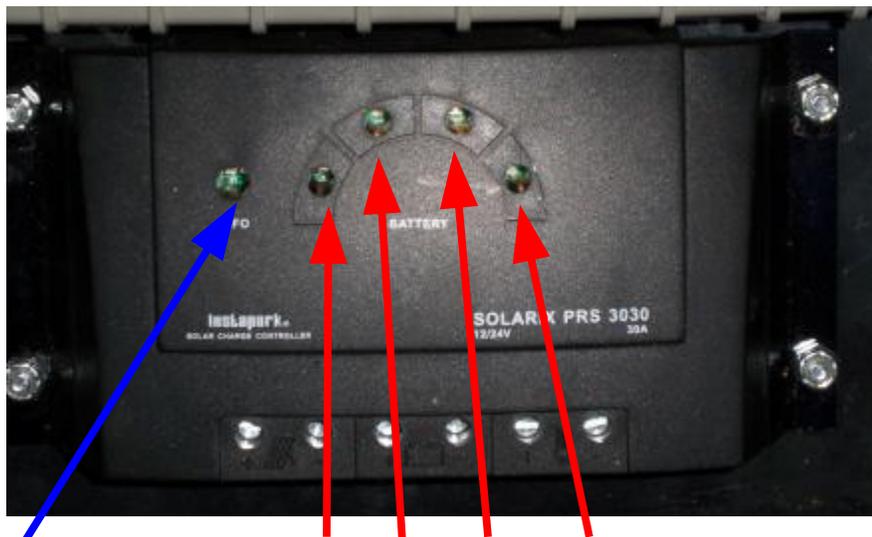
(Push to select mode of charging and battery bank voltage. Should be set to 12V Normal)

Battery bank state-of-charge LEDs

(Should show 12V Normal, if not, press mode switch until correct LED is lit.)

(Shows current state of charge, these LEDs only operate when the AC charger is plugged into a wall socket.)

Detail of Solar Charger/Controller



Status LED

(Should be green; will flash red on start-up and to indicate an error condition)

25% 50% 75% 100%

State-of-charge LEDs

(Shows Approximate State of Charge)

Section 3: External Ports and Connectors



The external ports/connectors for attaching the power cord for the AC charger and the solar panels are located on the right side of the unit, when facing the control panel.

Solar Panel Connector Detail



(Note the orientation of the plug; the tab is on the top. The plug just slides straight into the socket. It should go in smoothly, with little resistance. If it seems to require a lot of force, it is most likely started crooked.)



AC Charger port

Insert the plug into the socket with the silver tab on top, and turned slightly to the left. Push it in fully and gently twist it clockwise until it latches.

To remove, use your thumb to pull the silver tab toward you, then twist the plug counter-clockwise and pull it out of the socket.



Section 4: Operation and Maintenance

WARNING! The base unit is NOT water-proof, and must be stored and used in a dry location. Wind-driven rain will ruin the inverter, and worse, set up conditions where people or pets may be electrocuted. The solar panel assemblies may, however be safely used outdoors in any weather, so long as care is taken to prevent wind and falling objects like tree limbs, etc. from causing damage.



Also, please take note that in addition to the above very real danger, the warranty does not cover water or other weather-related damage to any of the components!

To use the unit, unplug the AC charger cord if it is connected, then wheel the unit to a convenient location. Open the cabinet door and turn the main switch clockwise to position #1 and then hold the inverter start button in until the inverter initiates. Connect any loads to the appropriate receptacles. Be sure to keep the door open and the grill on the back unobstructed so as to allow adequate airflow for inverter cooling.

Note that it is not necessary to have the solar panels connected in order to use the power station, but if they are not connected (and in direct sunlight), you will only have what power is in the batteries. There is no easy way to tell exactly how much charge remains in the batteries, so the best measure we have is to watch the battery bank voltage, which is shown on the inverter's digital display.

Battery voltage gradients change over time as the batteries age, but a good rule of thumb is that 12.8 to 14 volts is a reading for a battery pretty much fully charged. When the voltage drops to 12.1 to 12.3 volts, the batteries are usually about one half to two-thirds discharged. Voltage of 11.0 to 11.9 mean that the battery is pretty much exhausted, and voltages below about 10.7 will cause the inverter to shut off. These numbers are only approximate, experience is still the best teacher!

Please note that the voltage readings, to be accurate, must be read under a no-load condition. The voltage will be much lower when the batteries are under load.

To use the mobile solar panel assembly, wheel it to a location with a good Southern exposure to the sun, and if using the 200 or 300 watt multiple panel models, retract the wheel assemblies as shown in the pictures below, release the latch and unfold the panels, then loosen

the knobs and position the support struts such that the panels face the sun at approximately a 45 degree angle, and re-tighten the knobs. Uncoil as much cable as needed to reach the base unit, and plug it in. Procedure is the same for the 100 watt single-panel model except that the wheels must be locked with the brake knobs to prevent rolling.



The solar panel assembly has been built to be as sturdy as possible, but remember that the panels themselves are made of a low-iron glass, that while quite robust, is nonetheless glass, and WILL BREAK if the panels are dropped or fall onto a hard surface or object. The warranty DOES NOT cover broken solar panels!! Take care in setting up the panels so that the wind will not blow them over, and that they do not tip over. It is recommended that they be guyed in place in potentially windy situations.

On the multi-panel models; it is vital that the wheel assemblies be retracted to allow the panels to sit directly on the ground/floor when the panels are being used and also when they are being stored, otherwise the wheels will allow the unit to roll forward and collapse, falling onto the backs of the panels, possibly resulting in breakage! The single-panel model must likewise have the wheels locked in the same situations for the same reasons. The only time the wheels are lowered/unlocked is when the units are being moved!



Wheel locked in position for moving cart. To unlock, pull out the knob above the wheel and turn it 90° to lock it in the outward position, then tip the wheel strut back as shown.



Wheel unlocked. It must be in this position whenever the cart is not being moved.



100 watt single-panel cart wheel brake assembly.

To the right, detail of 200 watt unit with wheels unlocked; support struts extended and strut locking knobs tightened. At this point, just uncoil whatever cable is needed, and plug it into the base unit.



When you are finished with the unit, unplug the solar panel assembly, coil the cable on the brackets and stow the assembly in a safe place. Switch off the inverter by holding the power button in until the inverter shuts off, then turn the main switch to the off position. Close the cabinet door, and wheel the unit to a safe, indoor location. Plug the AC charger cord into a wall socket and plug the other end into the appropriate socket on the right side of the base unit. Open the cabinet door and verify that the AC charger is on, and that the left-most 12V Normal LED is lit. If it is not, press the mode button until it is. Also, at least one of the charge indicator LEDs should be lit. Close and latch the cabinet door. Note that the main switch should be OFF. The AC charger will automatically maintain the batteries at the optimum voltage as long as it is plugged in. There is no need for further intervention.

Please note that the AC charger will charge the batteries even if the main switch is off, but in order to charge the batteries with a solar panel, or to use the inverter or other power outlets, the main switch MUST be switched to position #1!

The only other maintenance needed besides keeping the batteries charged is to keep the faces of the solar panels clean to improve their efficiency.

Section 5 : Using the Included Booster Cables

Imagine: It's dark, the power has been out for 2 days and the meat in the freezer is thawing fast....the wife is freaking out, the sun hasn't been seen in 3 days, and the power station has been running the fridge and furnace, and is at less than 25% charge. What do you do now.....?

All Quantum Harvest solar power stations allow the user to use an automobile's electrical system to recharge the power station's batteries in an emergency. I realize that idling a 100+ horsepower engine solely to run the alternator is not very fuel efficient, but compared to losing the contents of a full freezer, or having the pipes freeze for lack of heat, a few gallons of gasoline seems a pretty small price!

The Model 2505l, due to the size of the battery bank, and the fact that the batteries are behind a panel, is furnished with a set of heavy cables that conveniently mate with a corresponding terminal on the control panel. This model also has a unique system to help prevent crossed polarity, which, again, due to the size of the battery bank, may result in damage to the vehicle's charging system. Below, you will see the steps necessary to use these features.



Failure to strictly adhere to the following steps may result in the vehicle's battery exploding, potentially causing severe injuries to the skin and eyes, and could also result in very costly damage to your vehicle's electrical system. Eye and hand protection is mandatory. As I have stated before, batteries, even relatively flat ones, store enormous amounts of energy that can melt tools, cause fires, and cause grave personal injuries. Don't be a statistic!



This is why I designed a polarity check system! A classic example of the "mystery battery syndrome"! Which is positive? Which is negative? Not to worry; see below.....



Step1: Be sure the main switch is either in the off or #1 position! The Polarity Check system is defeated if the main switch is in either the 1&2 or the #2 position!!





!WARNING! Every year, people die needlessly from carbon monoxide poisoning by running engines or heaters or such inside their homes.



Don't be a statistic! DO NOT run the vehicle's engine inside a garage with the doors closed!



Step 2: Position the power station a comfortable distance from the vehicle, then, first, plug the cables into the power station, then affix the clamps to the vehicles battery.

Step 3: Check for correct cable to battery polarity by looking at the LEDs on the control panel; See below.



Green LED lit indicates polarity is correct. Turn main switch to position "1 & 2" and charge batteries. (Note that the vehicle's engine must be running to actually charge batteries!)



Red LED lit indicates polarity is **INCORRECT! DO NOT MOVE THE MAIN SWITCH!** Reverse the clamps positions on the battery.

(Please note that the inverter pictured is different, but the procedure is the same.)

Step 4: After confirming the green LED is illuminated, thus ensuring the correct cable to battery polarity, turn the main switch to position “1 & 2”, and allow the batteries to charge. It is very important to be sure the vehicle's engine remains running, otherwise you will just end up with a flat battery in your car, and very, very, slightly charged batteries in the power station!



Be absolutely sure that the green LED is lit before moving the main switch to the top #1&2 position! If the switch is moved to this or the #2 position when the red LED is lit, there will be a dead short between the power station and the car's electrical system. This will almost certainly do a great deal of very dramatic and costly damage to both the car and the power station!

It is perfectly OK to run the inverter to power other loads while the car is charging the batteries, although it will slow the charging process. It will probably be necessary to use an extension cord from the power station, so be sure the cord is of heavy enough construction to carry the load, is not frayed, and is placed to minimize the tripping hazard.

Section 6: Removal and Re-installation of the Batteries, Power Head, and Charging Board

All Quantum Harvest power stations feature a modular construction that allows faulty components to be easily removed and returned to us for repair, without the necessity of having to crate up the entire heavy unit and paying the costly shipping charges for a 200+ lb. machine.

The power station consists of, in addition to the casing and batteries, two such removable modules; the power head, which contains the control panel, the inverter, and the bulk of the wiring, and the charger board, which contains both the solar controller and the AC charger.

Removal of the charger/battery cover assembly.



Step 1, Above: Remove these two knobs.

Step 2, Right: Remove the clear cover over the fuse by gently squeezing the bottom edges inward & remove.



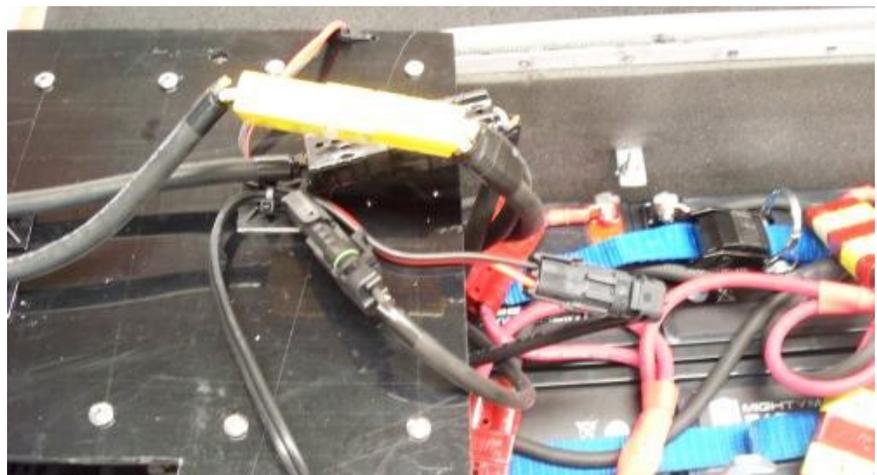
Step 3, Right: Pull up the top of panel slightly and slide toward the power head to disengage the bottom of the charger board from the slot by the main fuse.



Step 4, Right: Lay the charger board up and over the power-head as shown.



Step 5, Right: Disconnect the 4 connectors, and remove the board.



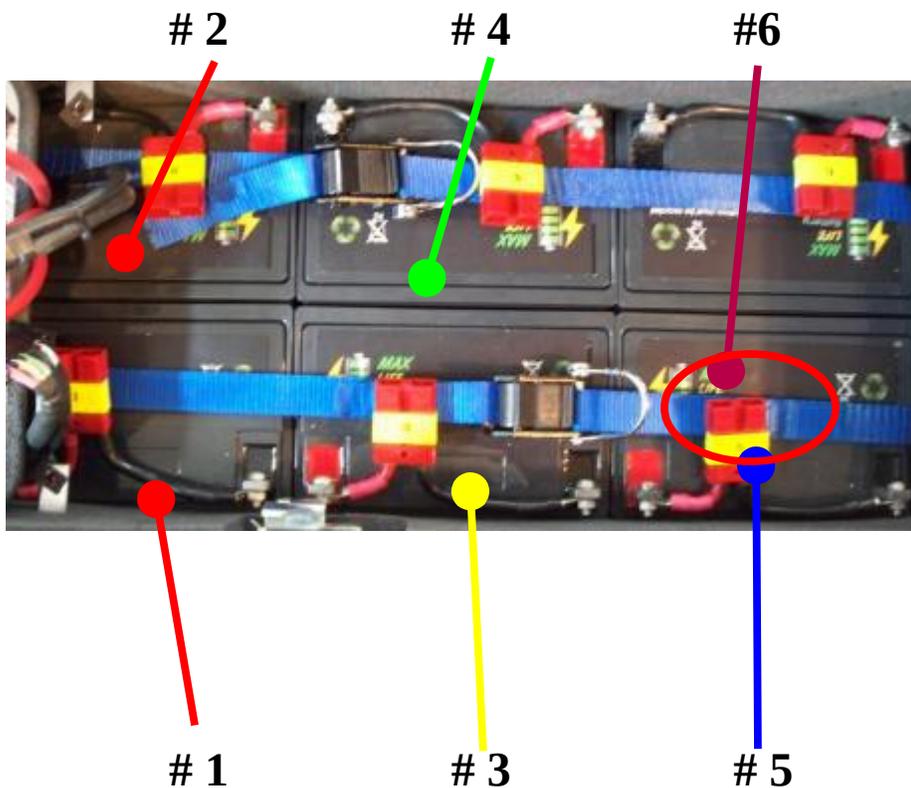
Reverse the above steps to re-install

Battery Removal



Caution Although the low voltage at the battery terminals means that electrical shock or electrocution is impossible, nonetheless, batteries store an enormous amount of potential energy, that if accidentally released by a short-circuit, can melt metal tools, start fires and cause personal injury. Eye protection **MUST BE WORN** whenever working with batteries of this size, and extreme care must be exercised at all times. Anything electrical is unforgiving of mistakes.

Battery numbering diagram



Step 1: Remove the charger board. (Pages 17-18)

Step 2: Remove the 400 amp fuse, and disconnect both leads from fuse terminals.

Step 3: Lay the power station down so that the batteries are laying flat.

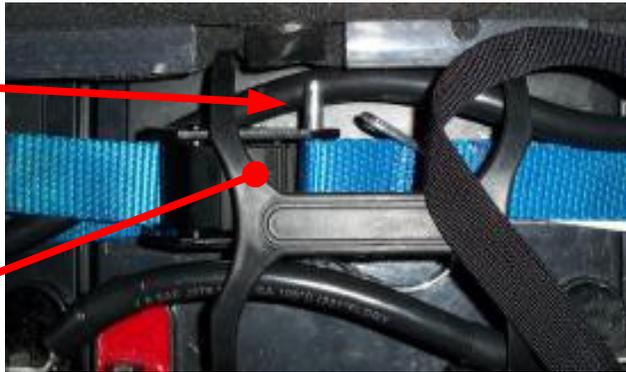
Step 4: Disconnect all 6 red connectors by pulling them apart.

Step 5, Right; Disconnect the heavy black lead from the fuse block left terminal, and lay the wiring harness up and over the power head and out of the way.



D-ring shown with retainer unlatched.

Release lever for battery retention straps.



Step 6, Above;: Loosen battery retention straps and remove D-rings to separate retention strap halves.

Step 8, Right: Remove batteries in the following order: #4 straight up and out, then slide #3 over to clear the bracket, then up and out. #5 and #6 can then be slid slightly up and removed, then #1 and #2 can be slid down and removed.



Re-installation of the batteries is covered on Page 23

Removal of Power Head Assembly

Step 1: Remove the charger board/battery cover. (Pages 17-18)

Step 2: Remove the 400 amp fuse, and disconnect both leads from fuse terminals. (Page 7)

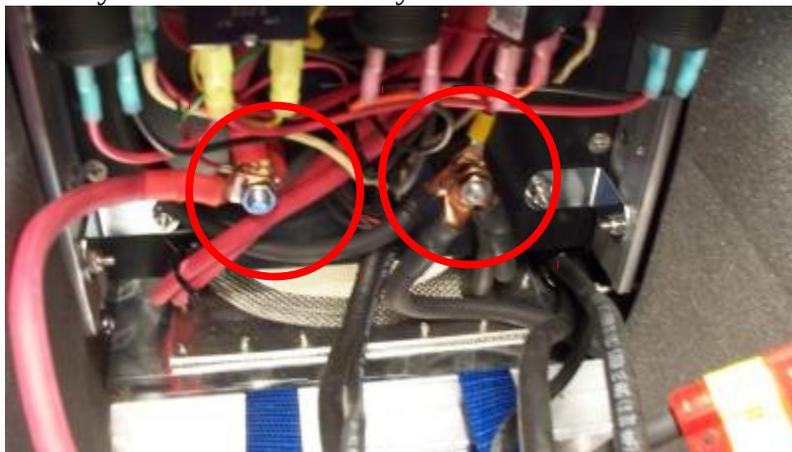
Step 3: Remove the batteries. (Pages 19-21)

Step 4: Remove the 2 screws (4 total) from each side of the power station. See next illustrations below.

Detail of screws securing the power head. Note that these are the ones with the washers



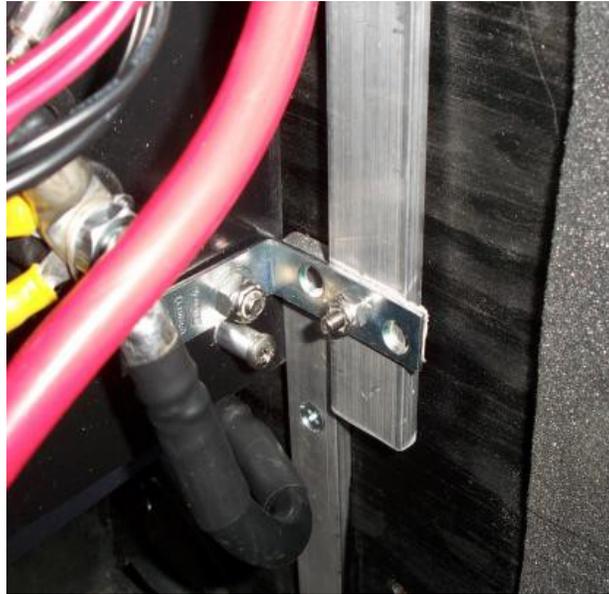
Step 6: Remove the heavy red and black battery cables shown below.



Step 7: Carefully lift the power head straight up out of the case, being careful not to pinch or damage the RF gasket. It may be necessary to carefully pry the sides of the case apart slightly with a flat-bladed screwdriver to allow sufficient clearance for the power-head to slide free of the case.

Reverse the above steps to re-install the power head.

Note the relationship of the power head supports/guides. (Right)



Battery Installation Instructions



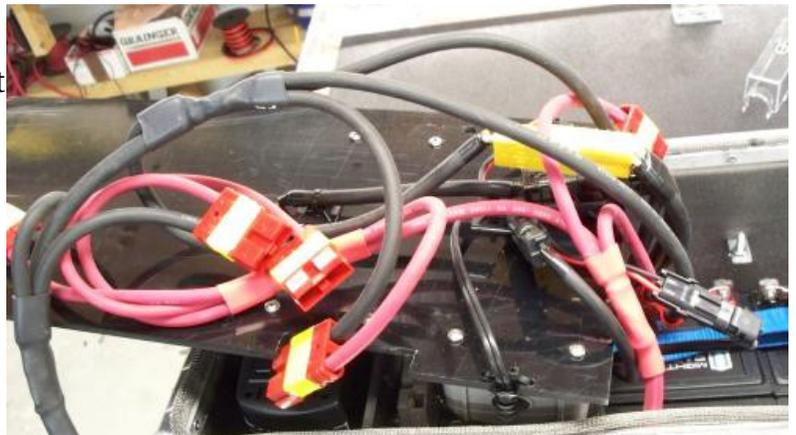
Caution Although the low voltage at the battery terminals means that electrical shock or electrocution is impossible, nonetheless, batteries store an enormous amount of potential energy, that if accidentally released by a short-circuit, can melt metal tools, start fires and cause personal injury. Eye protection **MUST BE WORN** whenever working with batteries of this size, and extreme care must be exercised at all times. Anything electrical is unforgiving of mistakes.

Things to note before starting:

Be careful with any metal tools that you do not inadvertently short between terminals. Remove any metal jewelry from your hands and avoid loose metal necklaces or such that may droop down and short between adjacent terminals. Work slowly and carefully, and wear eye protection at all times.

Be wary of applying excessive force; things should slide in and together smoothly. If something seems to go hard, it is most likely caught up on something or started crooked.

Step 1, Right: Lay the charger board, (if it is still connected), and the cable harness up over the power head out of the way as shown. (Right)



Step 2, Right: Place batteries #1 and #2 up against the power head as shown. **Below:** Note that batteries #1 and #2 must sit up on the angle bracket as shown.



Step 3, Below; Insert batteries #5 and #6 against the bottom. Be sure the ends of the blue retaining straps are not caught under the batteries. (It is helpful to hang the D-rings from the ends of the straps, and drape them over the back of the case as shown.)



Step 4, Right; Insert battery #3 in the middle, and slide it over against the left side. Then slide the last battery, #4 straight down into the remaining slot. Arrange blue retention strap so that they lie flat on top of the batteries, insert the D-rings, and tighten the straps. **Below**



Step 5, Right; Now lay the cable harness over the batteries and reconnect the end of the heavy black lead to the left terminal of the fuse block. Next, connect the six red connectors by sliding them straight together into the matching numbered halves. The reconnection order is irrelevant, just be sure they are all solidly connected!



Now, the charger board and main fuse may be reinstalled.

Contact Information

**Quantum Harvest, LLC
89 Chapman Ridge Rd.
Athens, ME 04912**

Email: support@quantumharvest.net

Warranty Information

All Quantum Harvest power station base units and mobile solar panel units are warranted to be free of defects in materials and workmanship for:

- Batteries, if provided by us.....1 year**
- Inverters, AC chargers and solar charger/controllers.....3 years**
- Everything else, including solar panels.....5 years**

To obtain warranty service, contact us at: support@quantumharvest.net for instructions. We will assist in diagnosing the affected component(s), and furnish an RMA. Shipping both ways is on us. You won't pay a cent for warranty service.

In addition to the above warranty, we are so confident of our products, we will never, as long as you own it, charge you labor for repairs. Even after the warranty period, if a component fails or gets damaged, just contact us at the above email address, and we will assist in diagnosing the problem and either arrange to send you the part at cost, or have you ship us the affected module, where we will diagnose the problem and contact you with the cost of the replacement part(s). You will pay what we pay, no more.

What is NOT COVERED under the warranty:

Physical damage to the solar panels, including, but not limited to; broken glass or broken or bent parts. If this unit falls out of a truck at 65 mph and goes bouncing down the road, one can hardly expect the manufacturer to fix it for free!

Physical damage to the power station itself. It weighs over 200 lbs.! If it gets dropped off a tailgate, it is going to be damaged.

Water damage to the internal components of the power station.

Damage caused by improper use of the booster cables. If someone turns on the inverter with the cables connected improperly to the vehicle, it will blow the main capacitors. (Believe me, I will know what happened when I see the inverter!) Obviously, if this happens, we won't fix the car, either!

Addendum A

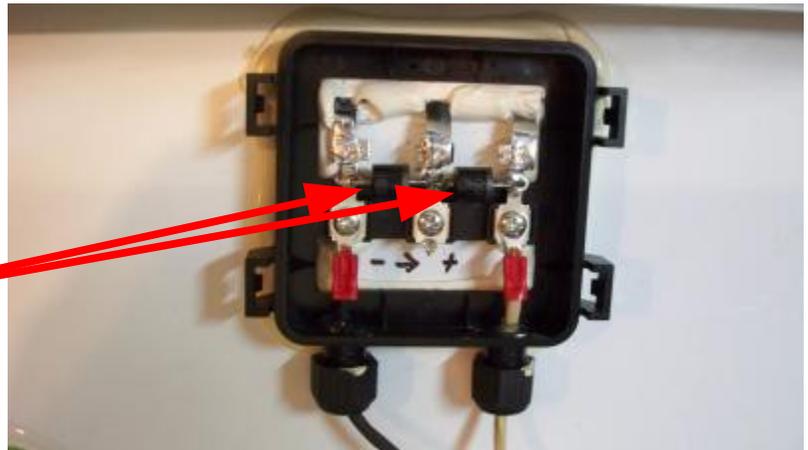
Solar Panel Diode Replacement

Note that each panel has a diode junction box, thus, the 300 watt triple panel assembly has 3 boxes and 6 diodes in total.

To gain access to the blocking diodes, remove the cover by inserting a thin-bladed screwdriver into the slot and gently prying inward to release the catch. Repeat for all 4 latches.



Diodes (2 per panel)



Using a pair of wire-cutters, carefully clip the diode leads to free the old diodes, and discard.



Loosen the 3 screws, and slip the replacement diodes in as shown. It is VERY IMPORTANT to orient the diodes properly. The silver stripe goes in the direction of the arrow. Snug the screws back up, being very careful not to strip the threads. Replace the cover and snap it into place

Silver stripe

Screws

