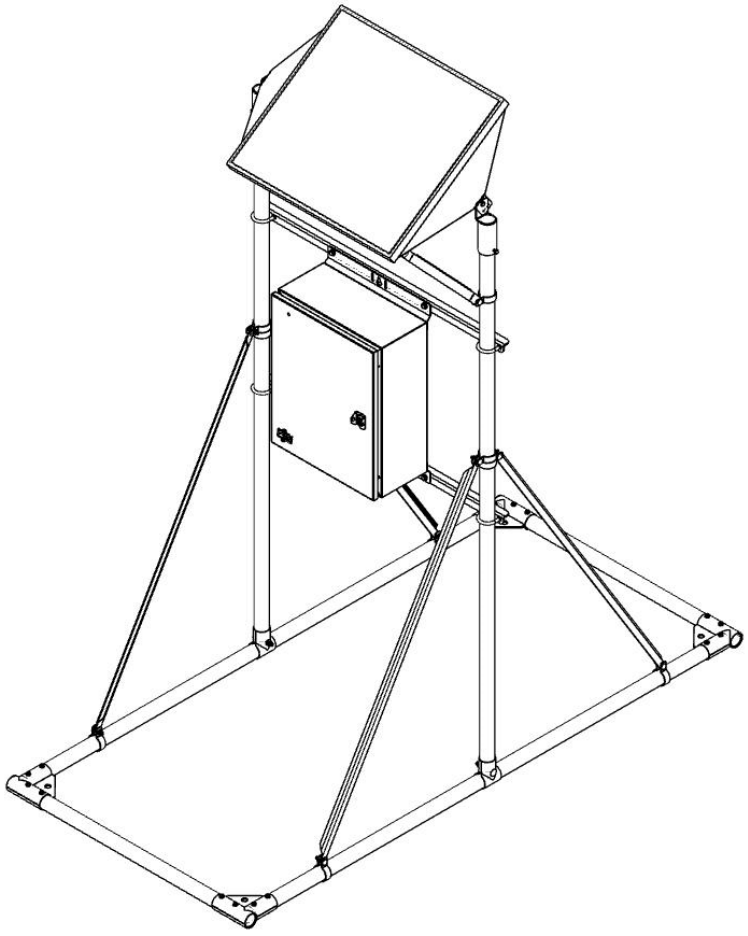
Voltar 3.0

USER'S MANUAL



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Your Next Generation UPS

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TECHNICAL DOCUMENTATION

Thank you for purchasing the ESPi VOLTAR 3.0 Solar UPS. At ESPi, we are proud of the quality products we innovate and manufacture and look forward to serving you as our customer. Please review all sections of this document before the installation and operation of the ESPi product in which this manual pertains.

This document pertains to the VOLTAR 3.0 Solar UPS and its family of products.

Applicable Models :

VOLTAR 3.0

Contact Information:

- Email sales@espicorp.com for sales related questions or requests.
- Email info@espicorp.com for technical product support.
- Telephone: (877) 799-3774

Safety Precautions

Please keep this manual for future review.

This manual contains all instructions for the safety, installation and operation of the Voltar Impulse series Maximum Power Point Tracking (MPPT) controller ("the controller" as referred to in this manual).

General Safety Information

- Carefully read through all the instructions and warnings in the manual before installation.
- No user serviceable components are inside the controller. DO NOT disassemble or attempt to repair the controller.

  DOING SO MAY VOID THE WARRANTY.

- Avoid unnecessary exposure to the elements and do not allow water to enter the enclosure.
- Install the enclosure in a well-ventilated place.
- Make sure to switch off all PV array connections and the battery breakers before controller installation and adjustment.

SAFETY PRECAUTIONS

- USE COMMON SENSE!
- Only qualified personnel should service this equipment
- The battery contains hazardous currents and may present a burn hazard if damaged, shorted, or installed improperly.
- The following precautions should be followed to insure your safety
    - Remove watches, rings, or other metallic objects.
    - Wear protective clothing and eye protection when working with batteries.
    - Always carry a water supply to wash eyes or skin in the event of exposure to battery electrolyte.
    - Use of tools with insulated handles is required.
    - Do not disassemble the unit. No user serviceable parts are inside except the batteries and fuse.
    - Keep liquid and foreign objects from getting inside of the unit.
    - Avoid operating unit in excessive humidity or near water.
    - Do not operate near gas or fire.
    - Inspect unit for leaking substance. If substance is leaking, do not use product.
    - Servicing this equipment may require working with protective covers removed and utility power connected. Use extreme caution during these procedures.
    - Check that power cord, plugs, and output terminals are in good working order.
    - BATTERY WARNINGS – Danger of explosion if battery is incorrectly connected. Use only approved replacement batteries.
    - Worn out or damaged batteries are considered environmentally unsafe. ALWAYS recycle used batteries in accordance with all federal, state, and local regulations. This is your planet too!
    - Any gel or liquid emissions from a VRLA battery contain sulfuric acid, which is harmful to the skin and eyes.
    - Batteries can produce explosive gases. Avoid all open flames and sparks.
    - Batteries contain or emit chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Battery post terminals contain lead and lead compounds. Wash hands after handling. (California Proposition 65)
    - Wear protective clothing and eye protection when installing, maintaining, servicing, or replacing batteries.
    - If battery emissions contact the skin or eyes, immediately wash area with water. Report chemical spills and seek medical attention if necessary.
    - Always replace batteries with new batteries of identical type and rating.
    - A battery showing signs of cracking, leaking, or swelling should be replaced immediately with an approved battery.

Quick Guide

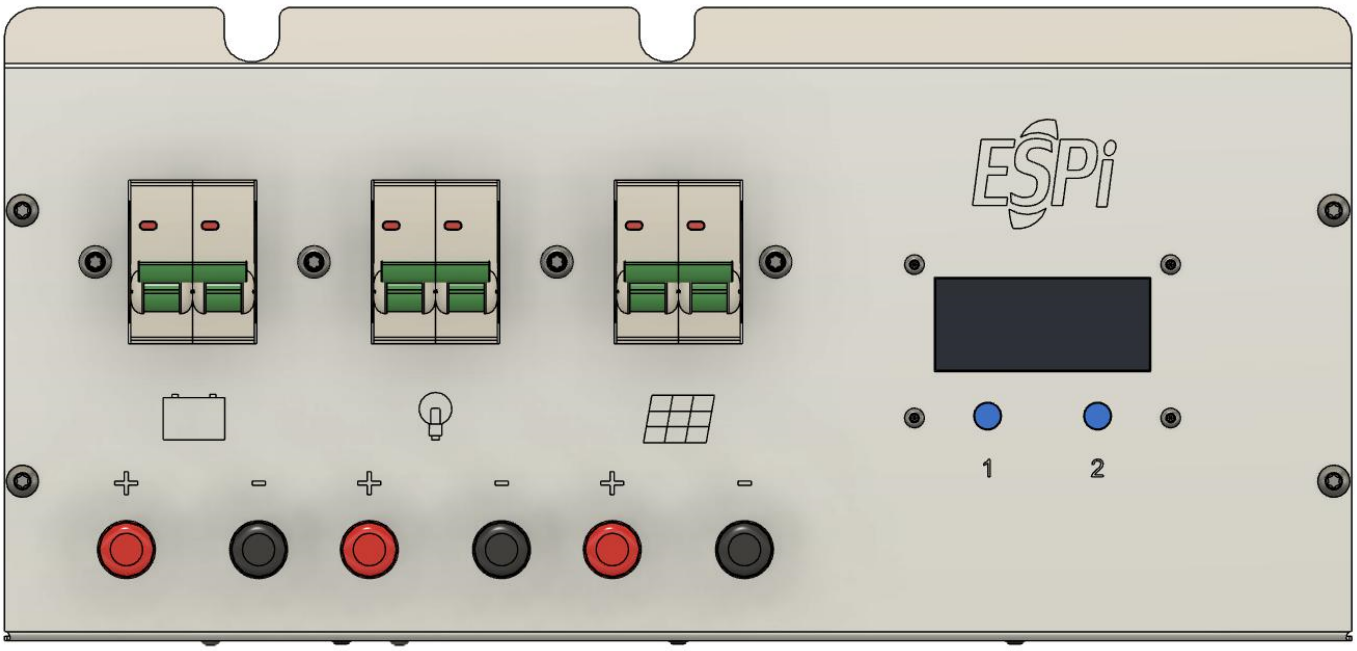
The Voltar was designed to be user-friendly and simple to understand. This single-page Quick Guide provides most of the relevant information needed to connect the Voltar .

Connections: Always work left to right when connecting.

Make sure all of the breakers are in the off/down position.

1. Connect the Battery first.
2. Connect the Load second.
3. Connect the Solar Panel third.
4. Turn on the Battery breaker.
5. Turn on the Load breaker

7. It may be necessary to push the OK button to turn the load on. Both the load breaker and the load icon must be on to have power to the load.



Disconnection: Always work right to left when disconnecting.

1. Shut off the Solar Panel breaker
2. Shut off the Load breaker
3. Shut off the Battery breaker

General Information

Overview

The Voltar series controller is based on a common negative design and advanced MPPT control algorithm and is equipped with an LCD display. The MPPT control algorithm can minimize the maximum power point loss rate and loss time, quickly track the maximum power point of the PV array and obtain the maximum energy from solar modules under any conditions. This can increase the ratio of energy utilization in the solar system by 20%-30% compared to PWM charging.

Limiting the charging power and current as well as reducing charging power functions ensure the system will remain stable with PV modules in high temperature environments. This further improves the reliability and meets different application requirements.

The Voltar series controller uses a self-adaptive three-stage charging mode based on a digital control circuit, which can effectively prolong the lifespan of the battery and significantly improve the system performance. It also has comprehensive electronic protection for overcharge, over discharge, PV & battery reverse connection protection, to ensure the system is more reliable and durable. This controller can be used for a variety of applications including RV, communication base stations, household systems, field monitoring and many other uses.

Features：

- 100% charging and discharging in working environment temperature
- LCD Display and High quality components(ST/IR/Infineon) to ensure long service life
- Advanced MPPT technology, with efficiency no less than 99.5%
- Maximum DC/DC conversion efficiency of 98%
- Ultra-fast tracking speed and guaranteed tracking efficiency
- Advanced MPPT control algorithm to minimize the MPP loss rate and loss time
- Accurate recognition and tracking of multiple-peaks maximum power point
- Wide MPP operating voltage range
- Limit charging power & current over rated range
- Power reduction automatically over temperature range
- Comprehensive electronic protection

Maximum Power Point Tracking Technology

Due to the nonlinear characteristics of solar arrays, there is a maximum energy output point (Max Power Point) on its curve. Traditional controllers, with switch charging technology and PWM charging technology, are unable to charge the battery at the maximum power point, so they can't harvest the maximum energy available from the PV array. This solar charge controller

with Maximum Power Point Tracking (MPPT) Technology can lock on the point to harvest the maximum energy and deliver it to the battery.

The MPPT algorithm continuously compares and adjusts the operating points to attempt to locate the MPP of the array. The tracking process is fully automatic and does not need user adjustment.

As Figure 1-2 shows, the curve is also the characteristic curve of the array, the MPPT technology will 'boost' the battery charge current through tracking the MPP. Assuming 100% conversion efficiency of the solar system, in that way, the following formula is established:

Input power (P_{PV})= Output power (P_{Bat})

Input voltage (V_{Mpp}) *input current (I_{PV}) =Battery voltage (V_{Bat}) *battery current (I_{Bat})

Normally, the VMpp is always higher than VBat, Due to the principle of conservation of energy, the IBat is always higher than IPV. The greater the discrepancy between VMpp &VBat, the greater the discrepancy between IPV & IBat. The greater the discrepancy between array and battery, the bigger reduction of the conversion efficiency of the system, thus the controller's conversion efficiency is particularly important in the PV system.

Figure 1-2 is the maximum power point curve; the shaded area is the charging range of traditional solar charge controllers (PWM Charging Mode). The MPPT mode can improve the usage of the solar energy resource. According to our test, the MPPT controller can raise 20%-30% efficiency compared to a PWM controller. (Value may fluctuate due to the influence of the ambient circumstance and energy loss.)

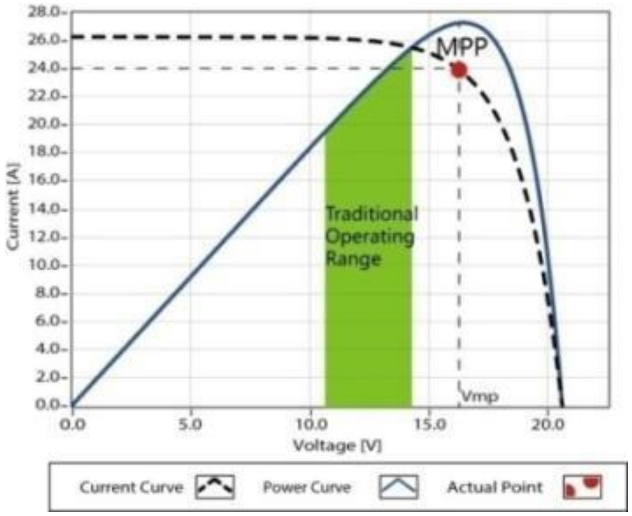


Figure 1-2 Maximum Power Point Curve

In an actual application, such as shading from a cloud, trees or snow, the panel may appear Multi-MPP, but in actuality there is only one real Maximum Power Point. As the below Figure 1-3 shows::

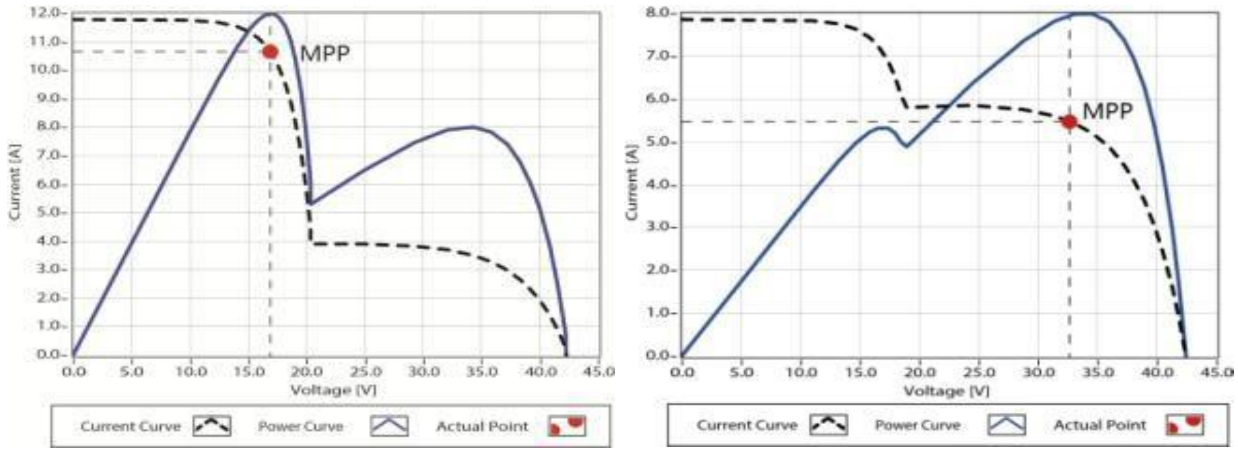


Figure 1-3 Multi-MPP Curve

Battery Charging Stage

The controller has a 3 stage battery charging algorithm (Bulk Charging, ConstantCharging and Float Charging) for rapid, efficient, and safe battery charging.

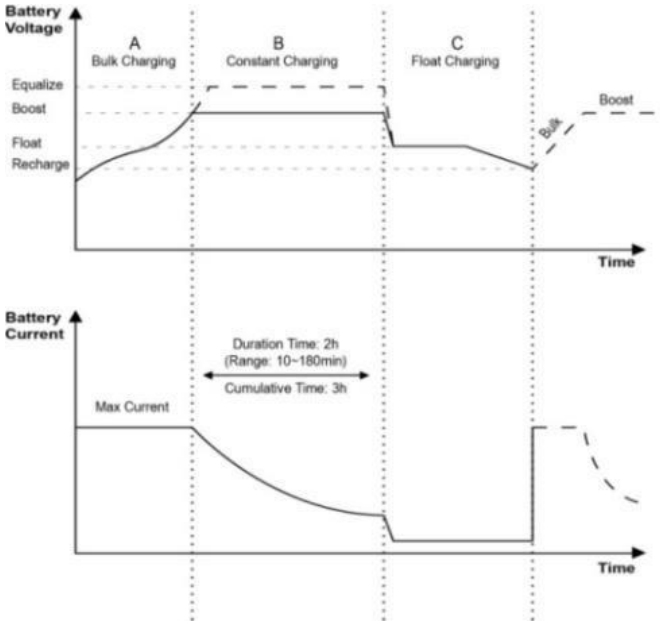


Figure 1-4 Battery changing stage Curve

Bulk Charging

In this stage, the battery voltage has not yet reached constant voltage (Equalize or Boost Voltage), the controller operates in constant current mode, delivering its maximum current to the batteries (MPPT Charging).

Constant Charging

When the battery voltage reaches the constant voltage setpoint, the controller will start to operate in constant charging mode, this process is no longer MPPT charging, and in the meantime the charging current will drop gradually. The Constant Charging has 2 stages, **Boost** and **Equalize**. These two stages are not carried out continuously in the full charge process to avoid overheating the battery.

Boost Charging

The Boost stage is set for 2 hours by default, The user can adjust the time and preset value of the boost voltage based on the load demand.

This stage is used to prevent heating and excessive battery gassing.

Equalize Charging

CAUTION: Equipment damage!
Equalization may increase battery voltage to the level that damages sensitive DC loads. Verify that all load allowable input voltages are 11% greater than the equalizing charging set point voltage.

CAUTION: Equipment damage!
Over-charging and excessive gas precipitation may damage the battery plates and activate material shedding on them. Too high of an equalizing charge or too long of period may cause damage.

Please carefully review the specific requirements of the battery used in the system.

Some types of batteries benefit from an equalizing charge on a regular basis. This is because during the equalizing the electrolyte is stirred, balancing battery voltage and accomplishing a chemical reaction. Equalizing charge increases battery voltage, higher than normal, which gasifies the battery electrolyte.

The controller will equalize the battery on the 28th of each month. The default equalization period is 0~180 minutes. If the equalization isn't accomplished in one-time, the equalization recharge time will be accumulated until the set time is finished. Equalize charge and boost charge are not carried out continuously in a full charge process to avoid too much gas precipitation or overheating of the battery.

NOTE:

1. Due to the influence of ambient circumstance or the size of the load, the battery voltage can't be held steady. The controller will accumulate and calculate the time of constant voltage working. When the accumulated time reaches 3 hours, the charging mode will turn to Float Charging.
2. If the controller time is not adjusted, the controller will equalize the charge of the battery once every month following the inner time.

Float Charging

After the Constant voltage stage, the controller will reduce the charging current to the Float Voltage setpoint. At the float stage the controller reduces charging with a lower voltage and current. This will reduce the temperature of the battery and prevent battery gassing while slightly charging the battery at the same time. The purpose of the Float stage is to offset the power consumption caused by self-consumption and small loads in the whole system, while maintaining full battery storage capacity.

In the Float charging stage, loads are able to obtain almost all power from the solar panel. If loads exceed the amount of power coming from the solar panel, the controller will no longer be able to maintain battery voltage in the Float charging stage. If the battery voltage remains below the Recharge Voltage, the system will leave the Float charging stage and return to the Bulk charging stage.

PV Array Requirements

MAXIMUM PV OPEN CIRCUIT VOLTAGE

At 77°F environment temperature 92V
At minimum operating environment temperature 100V

PV modules

As the core component of the PV system, the controller is compatible with various types of PV modules. ESPi recommends using the largest wattage solar panel allowable this will provide the charge controller with the most power allowing it to work at it's full potential and thus charge the battery quicker.

Maximum PV array power

The MPPT controller has the function of current/power-limiting during the charging process. When the power exceeds the rated current, the controller will automatically limit charging. This can effectively protect the charging components of the controller, and prevent damage to the controller due to the connection of some PV modules. The actual operation of the PV array is as follows:

Condition 1:
Actual charging power of PV array ≤ Rated charging power of controller

Condition 2:
Actual charging current of PV array ≤ Rated charging current of controller when the controller operates under "**Condition 1**" or "**Condition 2**", it will carry out charging as per the actual current or power; at this time, the controller can work at the maximum power point of PV array.

WARNING: When the power of PV is not greater than the rated charging power, but the maximum open-circuit voltage of PV array is more than 100V (at the lowest environmental temperature), the controller may be damaged.

Condition 3:
Actual charging power of PV array > Rated charging power of controller

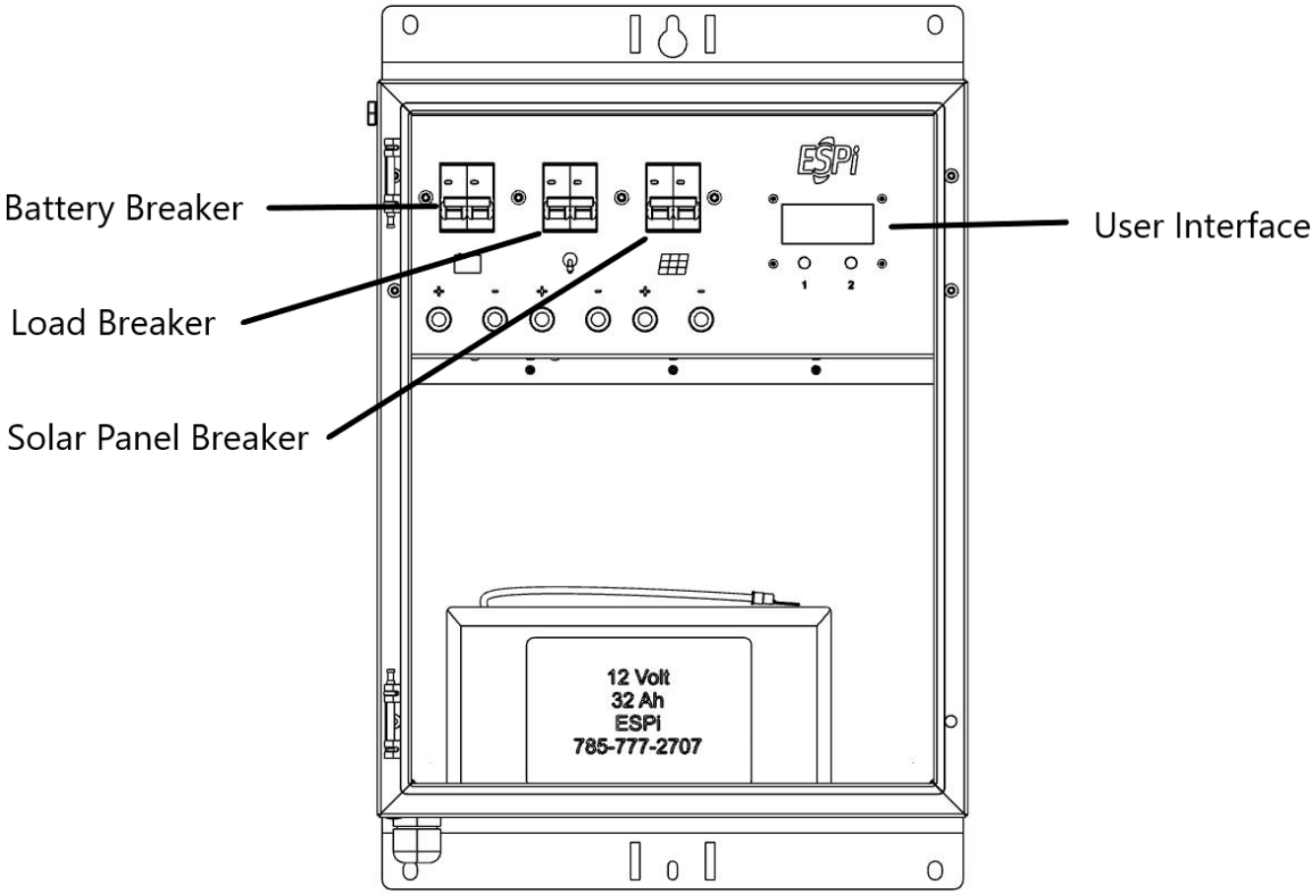
Condition 4:
Actual charging current of PV array > Rated charging current of controller

When the controller operates under "**Condition 3**" or "**Condition 4**", it will carry out the charging as per the rated current or power.

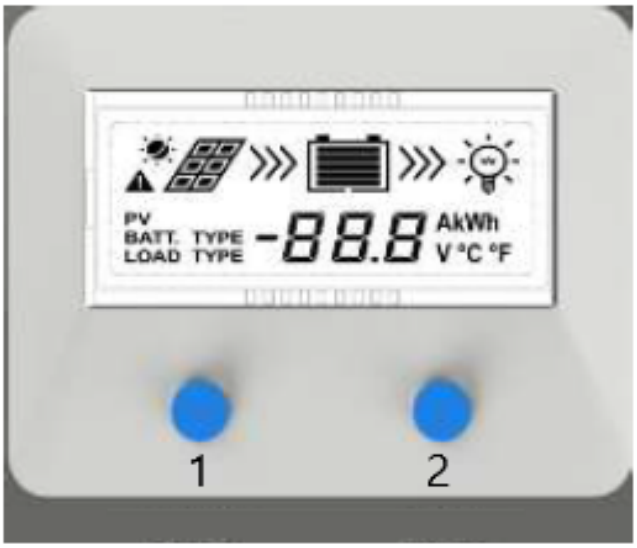
WARNING: When the power of PV module is greater than the rated charging power, and the maximum open-circuit voltage of PV array is more than 100V (at the lowest environmental temperature), the controller may be damaged.

The maximum power of the PV array shall not be greater than 1.5 x the rated charging power of the controller. If the maximum power of PV array exceeds the rated charging power of controller too much, it will not only cause the waste of PV modules, but also increase the open-circuit voltage of PV array due to the influence of environmental temperature, which may make the probability of damage to the controller rise. Therefore, it is very important to configure the system reasonably. **For this reason, we have supplied a 50W solar panel for you**.

Interior Layout



Operation



Note: The display screen can be viewed clearly when the angle between the end-users horizontal sight and the display screen is within 90°. If the angle exceeds 90°, the information on the display screen cannot be viewed clearly.

3.1 Buttons

Mode	Note
Load ON/OFF	It can turn the load On/Off via the 2 button in manual load mode.
Clear fault	Press the 2 button.
Browsing mode	Press the 1 button.
Setting mode	Press the 2 button and hold on 5s to enter the setting mode. Press the 1 button to set the parameters. Press the 2 button to confirm the setting parameters or no operation for 10s. It will exit the setting interface automatically.

3.2 Interface

1） Status Description

Name	Icon	Status
PV array		Day
		Night

		No charge
		Charging
	PV	PV array's voltage, current, and generate energy
Battery		Battery capacity, In charging
	BATT.	Battery Voltage, Current, Temperature
	BATT. TYPE	Battery type
Load		Load ON
		Load OFF
	LOAD	Current/Consumed energy/Load mode

2） **Error codes**

Status	Icon	Instruction
Battery over-discharged		Battery level shows empty, battery frame blink, fault icon blink
Battery over voltage		Battery level shows full, battery frame blink, fault icon blink
Battery overheating		Battery level shows current value, battery frame blink, fault icon blink
Load failure		Overload①, Load short circuit

① When the load current reaches1.02-1.05 times, 1.05-1.25 times, 1.25-1.35 times, and 1.35-1.5 times more than the rated value, the controller will automatically turn off the loads in 50 seconds, 30 seconds, 10 seconds, and 2 seconds respectively.

3） **Browse interface**

Press the 1 button to cycle display the following interfaces.

3.3 Setting

3.3.1 Clear the generated energy

Step 1: Press 2 button and hold 5s under the PV-generated energy interface, and the value will flash.

Step 2: Press the 2 button to clear the generated energy.

3.3.2 Switch the battery temperature unit

Press the button and hold for 5s under the battery temperature interface to switch the temperature unit.

3.3.3 Battery type

1. Supported battery types

1	Battery	Sealed(default)
		Gel
		Flooded
2	Lithium battery	LiFePO4 (4S/12V; 8S/24V)
		Li(NiCoMn)O2 (3S/12V; 6S/24V; 7S/24V)
3	User	

2. Local set the battery type

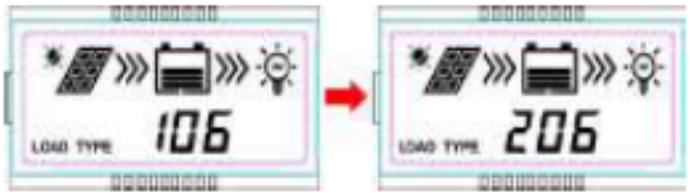
Operation:

Step1: Press the 1 button to jump to the battery voltage interface.

Step2: Press and hold the 2 button until the battery-type interface flashes.

Step3: Press the 1 button to change the battery type, shown below:

Step4: Press the 2 button to confirm.



When the LCD shows the above interface, operate as follows:

Operation:

Step1: Press the 1 button to jump to the load type interface.

Step2: Press and hold the 2 button until the load type interface flashes.

Step3: Press the 1 button to modify the load type.

Step4: Press the 2 button to confirm.

1. Load mode list

1**	Timer 1	2**	Timer 2
100	Light ON/OFF	2 n	Disabled
101	The load will be on for 1 hour since sunset	201	The load will be on for 1 hour before sunrise
102	The load will be on for 2 hours since sunset	202	The load will be on for 2 hours before sunrise
103-113	The load will be on for 3 ~13 hours since sunset	203--213	The load will be on for 3 ~13 hours before sunrise
114	The load will be on for 14 hours since sunset	214	The load will be on for 14 hours before sunrise
115	The load will be on for 15 hours since sunset	215	The load will be on for 15 hours before sunrise
116	Test mode	2 n	Disabled
117	Manual mode(Default load ON)	2 n	Disabled

CAUTION	When selecting the load mode as the Light ON/OFF mode, Test mode, and Manual mode, only the Timer 1 can be set, and the Timer 2 is disabled and display "2 n ".

Protection

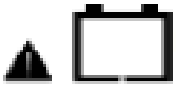
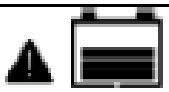
No.	Protections	Instruction
1	PV Over Current	When the actual PV array's charging current or power is higher than the controller's rated charging current or power, the controller will charge the battery per the rated current or power.
2	PV short-circuit protection	Not in the PV charging state, the controller will not be damaged when the PV array is short-circuited. **WARNING:** It is forbidden to short-circuit the PV array during charging. Otherwise, the controller may be damaged.
3	PV reverse polarity protection	When the PV array's polarity is reversed, the controller may not be damaged and resume work after correcting the mis-wiring. **CAUTION:** If the PV array is reversed and its actual power is 1.5 times the controller's rated power, the controller may be damaged.
4	Night reverse charging protection	Avoid the battery from discharging to the PV module at night.
5	Battery reverse protection	When the polarity of the battery is reversed, the controller may not be damaged and resume normal operation after the mis-wiring is corrected. **CAUTION:** Limited to the characteristic of lithium battery, when the PV array connection is right and the battery connection is reversed, the controller will be damaged.
6	Battery over voltage protection	When the battery voltage reaches the over voltage disconnect voltage, the PV array will automatically stop charging the battery to avoid battery damage.
7	Battery over-discharging protection	The battery discharging is automatically stopped when the battery voltage is lower than the low voltage disconnect voltage.
8	Battery overheating protection	The controller detects the battery temperature through an external temperature sensor. The battery stops working when its temperature exceeds 65℃ and resumes work when it is below 55℃.
9	Lithium battery low temperature protection	When the temperature detected by the optional temperature sensor is lower than the Low-Temperature Protection Threshold(LTPT), the controller will stop charging and discharging automatically. When the detected temperature is higher than the LTPT, the controller will work automatically

		(The LTPT is 0 °C by default and can be set within 10~ -40 °C).
10	Load short circuit protection	When a short circuit occurs on the load side (four times higher than the rated load current), the controller automatically cuts off the output. The output still attempts to resume five times automatically (delay 5 seconds, 10 seconds, 15 seconds, 20 seconds, 25 seconds). Suppose you want the controller to restart the auto-recovery process. In that case, you need to press the Load button, restart the controller, or experience a night-to-day change (night time > 3 hours).
11	Overload protection	If the load current exceeds 1.05 times the controller's rating, the controller will cut off the output after a delay. After the overload occurs, the output attempts to resume automatically five times (delay of 5 seconds, 10 seconds, 15 seconds, 20 seconds, and 25 seconds). Suppose you want the controller to restart the auto-recovery process. In that case, you need to press the Load button, restart the controller, or experience a night-to-day change (night time > 3 hours).
12	Device overheating protection	An internal temperature sensor can detect the internal temperature of the controller. The controller stops working when its internal temperature is higher than 85℃and resumes working when its internal temperature is below 75℃.
13	TVS high voltage transients protection	The controller's internal circuitry is designed with Transient Voltage Suppressors (TVS), which can only protect against high-voltage surge pulses with less energy. Suppose the controller is to be used in an area with frequent lightning strikes. In that case, it is recommended to install an external surge arrester.

★ When the controller's internal temperature reaches 81℃, the charging power automatic reduction function is enabled. Temperature increases by 1 ℃, and the charging power is reduced by 5%, 10%, 20%, and 40%. If the internal temperature exceeds 85℃, the controller stops charging the battery. When the internal temperature is lower than or equal to 75℃, the controller resumes charging per the rated charging power.

Troubleshooting

Faults	Faults	Troubleshooting
PV array open-circuit	When there is plenty of direct sunlight on the PV array, the LCD shows	Confirm whether the connection of the PV array is correct and tight.
The battery voltage is lower than 8V.	The wire connection is correct; the controller is not working.	Please check the battery's voltage (at least 8V voltage to activate the controller).

Battery over voltage	 Battery frame blink,	Check whether the battery voltage is higher than OVD (over voltage disconnect voltage) and disconnect the PV array connection.
Battery over discharged	 Battery frame blink,	① When the battery voltage is restored to or above LVR (low voltage reconnect voltage), the load will recover. ②Take other ways to recharge the battery.
Battery overheating	 Battery frame blink,	While the temperature declines below 55 ºC, the controller will resume.
Overload	1. Load off 2  Load and fault	① Please reduce the number of electric devices. ② Restart the controller or press the button to clear faults.
Load short-circuit		① Check carefully loads connection, clear the fault. ② Restart the controller or press the button to clear faults.

① When the load current goes higher than 1.02-1.05 times, 1.05-1.25 times, 1.25-1.35 times, and 1.35-1.5 times the rated value, the controller may automatically turn offloads in 50 seconds, 30 seconds,10 seconds, and 2 seconds respectively.

Enclosure Features

QUARTER TURN LOCKING DOOR LATCHES

The cabinet door is equipped with (2) quarter-turn pad-lockable latches. The latch is secured by turning the 7/16" hex security bolt one quarter turn clockwise until the stop is reached. A convenient security locking hasp is factory installed to allow for a standard Master lock padlock (or equivalent) to be installed. With a padlock inserted, the security bolt cannot be accessed. Thus, protecting the cabinet from undesired intrusions.

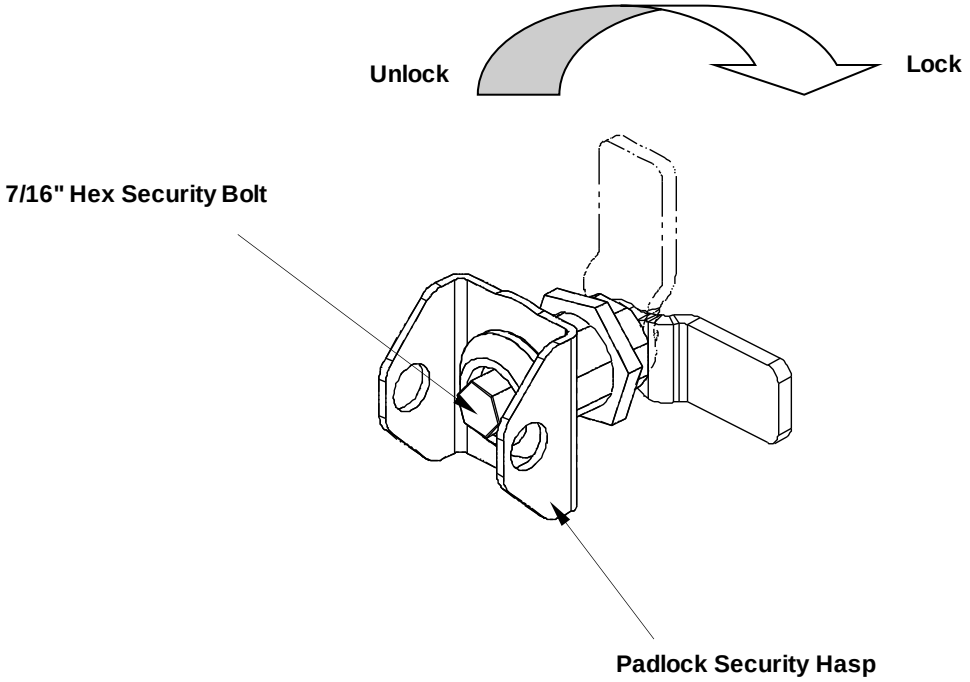


Figure A – Quarter Turn Locking Door Latch

General Installation Notes

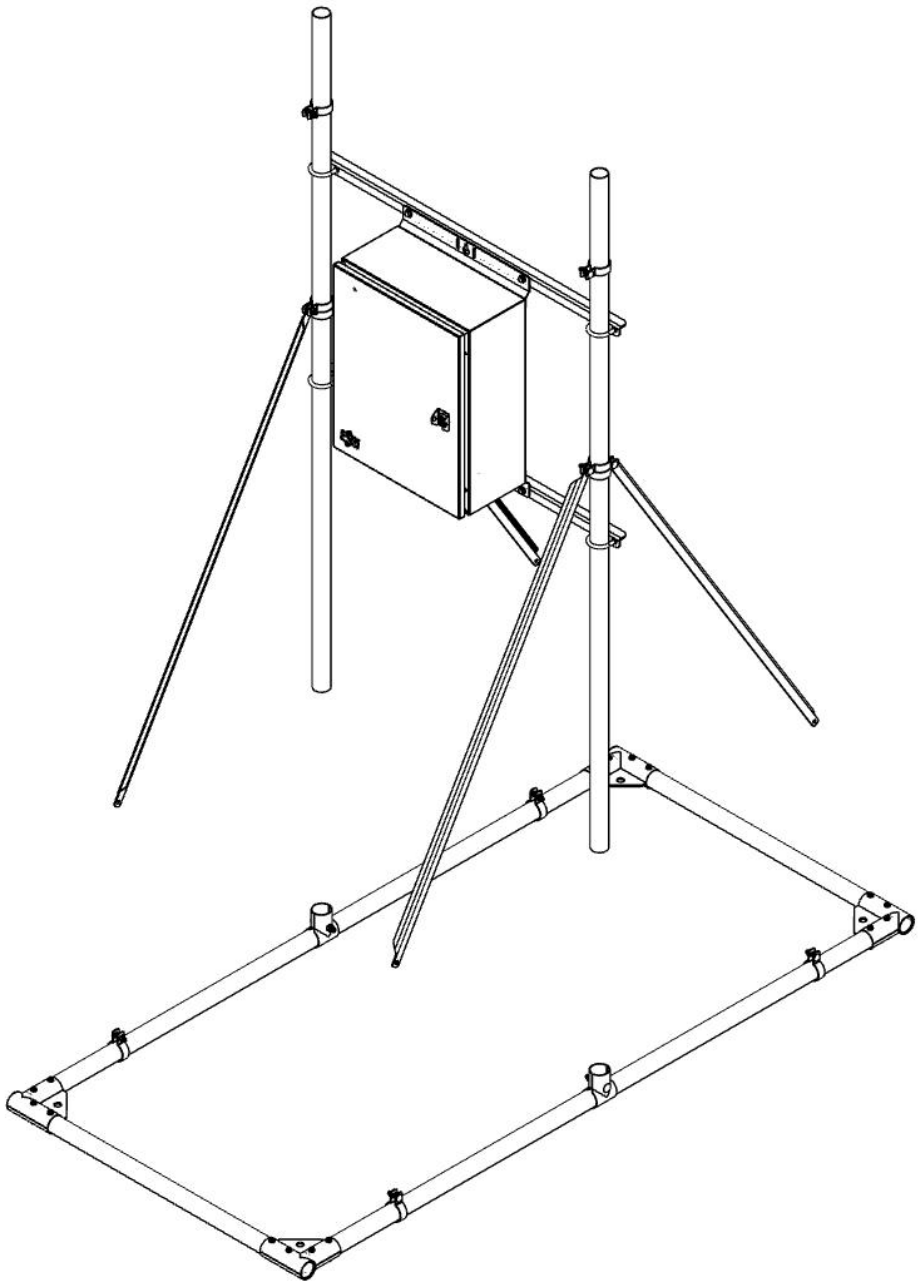
- Please read through the entire installation instructions to become familiar with the installation steps before installing the unit.
- Be very careful when installing the batteries. Please wear eye protection, and have fresh water available to wash and clean any contact with battery acid.
- Keep the battery away from any metal objects, which may cause a short circuit of the battery.
- Loose power connections and corroded wires may result in high heat that can melt wire insulation, burn surrounding materials, or even cause fire. Ensure tight connections and use cable clamps to secure cables and prevent them from swaying in mobile applications.

INSTALLATION PROCEDURE

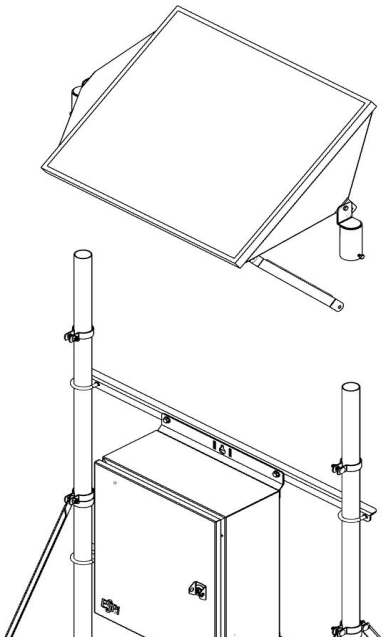
The installation of the unit must be performed by skilled technicians and electricians familiar with electrical equipment. Do not allow unqualified personnel to handle, install, or operate the equipment. Install this unit in a location away from gas, fire, and potential sparks. The VOLTAR series cabinet is shipped ready for equipment and battery installation. The following pages will provide information on mounting, grounding procedure, alarm connection guide, solar panel installation and more.

Note: Due to the heavy weight of the enclosure and batteries, we recommend using through bolts instead of lag bolts when installing the unit on a wooden utility pole.

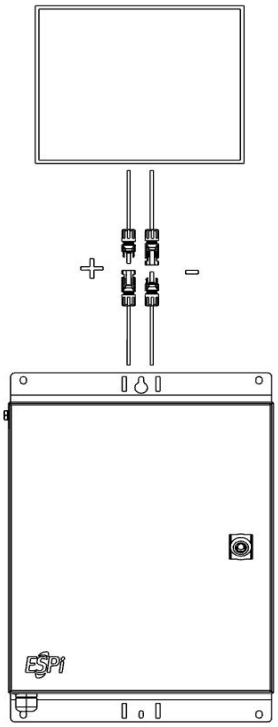
Some assembly of the Voltar mobile base kit and enclosure may have already been done for you. If this is the case all you need to do is insert the vertical legs into the rectangular base and attach the angle support braces. Tighten all bolts once assembly is finished.



Place the solar panel and brackets on top of the two vertical post. Adjust the solar panel to the desired angle and tighten all bolts.



Connect the solar panel to the mating wires coming from the enclosure.



CABINET GROUNDING INFORMATION

Bonding and grounding should be done in accordance with the operating telephone company's standard procedures and comply with local electrical codes.

GROUND WIRE

The ground wire protects the electronics from voltage surges. A #6 ground wire must be properly grounded to provide lightning surge protection for the cabinet. Please follow this practice for attaching the ground unless local policies dictate otherwise.

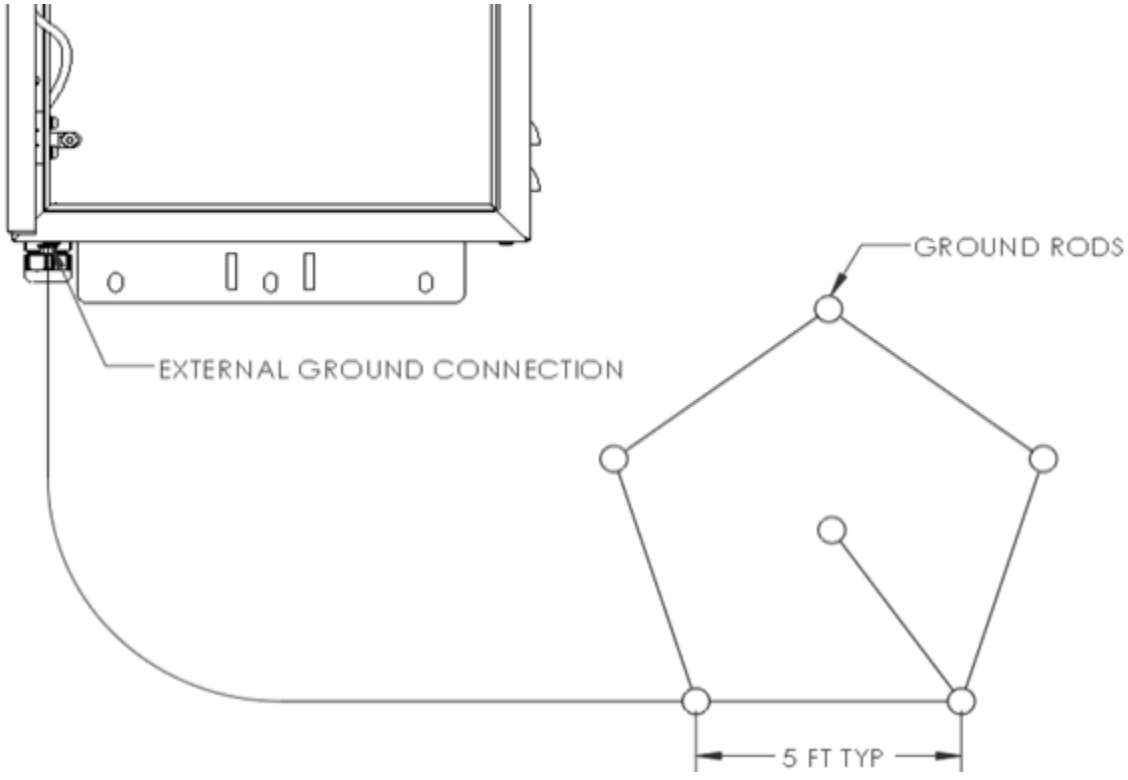
For safety and performance reasons it is imperative that a cabinet be properly grounded. The following guidelines should be used to ground the cabinet unless local practices, rules, or regulations dictate otherwise.

Each door and equipment rack is grounded to the cabinet frame. The cabinet frame is connected to the internal grounding bus by a stranded wire. A similar ground wire must be used to connect the ground bus to each equipment ground lug. These ground wires may need to be removed temporarily to troubleshoot ground faults. The wire may be removed by unscrewing the screws that secure the green wire to the ground bus. **Be sure to reattach these wires after troubleshooting and resolving any ground conflicts.** Ground the cabinet before connecting power to the cabinet. This grounding must be in effect at all times to safeguard personnel.

GROUNDING DIAGRAM AND PROCEDURE

Grounding Procedure:

1. Drive the ground rods into the ground near the cabinet location.
2. Use a Megger-type ohmmeter to measure the resistance between cabinet ground and the ground rods. The resistance must be 25 ohms or less.
3. If the ohm requirement in step 2 is met, proceed to step 4. Otherwise, follow local practices to lower the resistance to ground to comply with step 2 before proceeding to step 4.
4. Connect a #6 ground wire to the ground rods.
5. Install the battery inside the enclosure being careful not to short the terminals to any metal object.
6. Ground your device the ground lug inside the enclosure.
7. Connect the black battery terminal to the negative battery post.
8. Connect the red battery terminal to the positive battery post



APPENDIX A

TECHNICAL SUPPORT

Technical assistance is available 8 AM to 5 PM Central Time.
Contact ESPi at:

Telephone 877-799-3774 (*toll free*)

ORDERING PROCEDURE

You may place orders by telephone or email:

Telephone: 877-799-3774 (Toll Free)
Email: sales@espicorp.com
Mail: ESPi
630 Lincoln St
Clay Center, Kansas 67432

When placing an order, please provide the following information:

- Customer purchase order number
- Ship-to and bill-to addresses
- Part numbers and quantities required
- Requested delivery date
- Preferred method of shipment

APPENDIX B

RETURN FOR REPAIR POLICY AND PROCEDURE

CORPORATE POLICY

ESPi warrants this product to be free of defects and to be fully functional for a warranty period beginning from the date of original shipment, given correct customer installation and regular maintenance. ESPi will repair or replace any unit without cost during its warranty period if the unit is found to be defective for any other reason other than abuse or incorrect use or incorrect installation. ESPi is not liable for any labor or repair costs incurred by the customer.

Do not try to repair the unit. If it fails, replace it with another unit and return the faulty unit to ESPi for repair. Any modification of the unit by anyone other than an authorized ESPi representative voids the warranty.

RMA PROCEDURE

If a unit needs repair, call ESPi at 877-799-3774 (toll free) for an RMA Number and return the defective unit, freight prepaid to:

ESPi
Shipping & Receiving
630 Lincoln
Clay Center, KS 67432
Attn: Repair Dept.

When preparing the unit for shipment:

- Use the original packaging
- Provide the following information (required):
    - The RMA Number posted on outside of shipping container

(ESPi will not accept return shipments without an RMA)

- Statement inside the shipping container with the following details:
- RMA Number
- Description and quantities of equipment being returned
- Brief description of the problem
- Your billing address
- Your shipping address

You will be notified of the repair status of the returned equipment within 2 weeks of receipt of your shipment at the address listed above. ESPi will provide needed equipment repair beyond the warranty period for a nominal charge. Contact your ESPi sales representative for details and pricing.

APPENDIX C

ESPi STANDARD TERMS AND CONDITIONS

ALL QUOTATIONS AND SALES ARE SUBJECT TO THE FOLLOWING TERMS AND CONDITIONS AS WELL AS THOSE CONTAINED ON THE ORIGINAL QUOTATION.

Warranty: ESPi LLC is very proud of the product we have created. Should you need support please call 877-799-3774 or visit our website at espicorp.com.

ESPi LLC warrants to you, the Initial Purchaser, that the Product will be free from defects in material and workmanship for one year from the date of original purchase, subject to the terms of this Limited Warranty. This Limited Warranty gives you specific rights, and you may have other rights, which vary from State to State or Province to Province Any Implied Warranty of Merchantability or for Fitness for a Particular Purpose, if applicable to the Product, is limited in duration to three years. This provision shall NOT create any Implied Warranty or Merchantability or of Fitness for a Particular Purpose that would not otherwise apply to the Product. NOTE: Some States and provinces do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply to you. To be covered you must still be the owner of the Product at the time of the failure that results in the claim made under this Limited Warranty. Your sole and exclusive remedies are those provided by this Limited Warranty. This exclusion of other express warranties applies to written and oral express warranties. ESPi excludes any liability for personal injury. ESPi excludes any liability for direct, indirect, special, incidental, or consequential damages, whether for damage to or loss of property, loss of profits, business interruption, information or data. This exclusion applies even though damage or loss is caused by negligence or other fault. NOTE: Some States or Provinces do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation may not apply to you.
DO NOT USE FOR MEDICAL OR LIFE SUPPORT EQUIPMENT OR OTHER HIGH RISK ACTIVITIES.
ESPi does not sell the PRODUCT for use in high-risk activities. The PRODUCT is not designed or intended for use in hazardous environments requiring fail-safe performance, including the operation of nuclear facilities, aircraft navigation or communication systems, air traffic control, weapons systems, life support or medical applications or for use in any circumstance in which the failure of the PRODUCT could lead directly to death, personal injury, or severe physical or property damage, or that would affect operation or safety of any medical or life support device (collectively, "High Risk Activities").
ESPi LLC expressly disclaims any express or implied warranty of fitness for High Risk Activities. ESPi LLC does not authorize use of any of our products in any High Risk activities.
ANY SUCH USE IS IMPROPER AND IS A MISUSE OF AN ESPi PRODUCT.
The Limited Warranty is governed by the laws of the United States and the State of Kansas, without reference to conflict of law principles. The application of the United Nations Convention of Contracts for the International Sale of Goods is expressly excluded.

ESPi
espicorp.com
Your Next Generation UPS™

ESPi
630 Lincoln Street
Clay Center, Kansas 67432
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www.espicorp.com

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