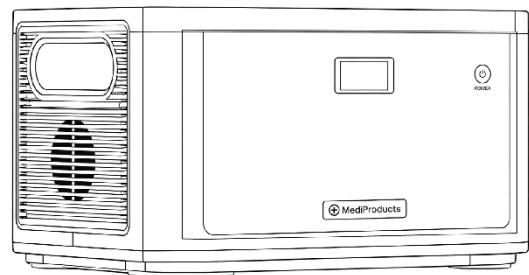
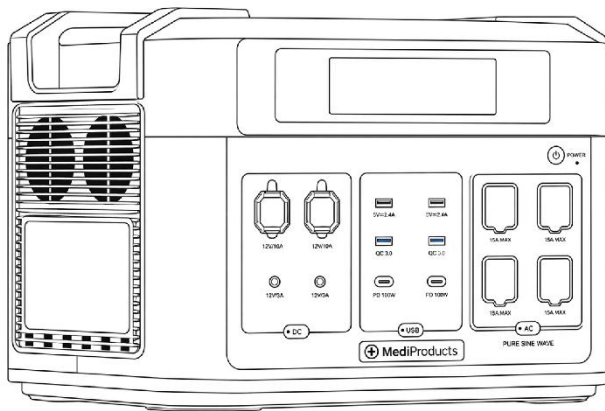




SaverCell 24 System User Manual



Medicanix, Inc. dba Medi-Products

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Contents

Contents	1
Safety and Disclaimer	2
Intended Use and Equipment & Wiring Connections	2
Statement of Liability for Medical Environments	2
Installation	3
Pre-installation Steps:	3
Installation Steps:	4
Unit Startup Procedure	8
Operation	9
Troubleshooting	10
Qualified Technical Support	11
Testing Procedure	12
Weekly Testing:	12
Monthly Testing:	13
Maintenance Procedure	15
Unit Shut Down Procedure	16
Warranty Activation Form	17

Safety and Disclaimer

Intended Use and Equipment & Wiring Connections

- This battery backup system stores energy. Outlets may be live when the system is turned off or after the input power has been disconnected.
- Please be sure to turn off the electricity in the location where the battery backup will be installed prior to working on the unit.
- Please be sure that the power supplied to this unit is the proper phase, voltage and amperage specified.
- The battery backup system is required to be powered on a dedicated circuit.
- Although the system is supplied with lithium-ion batteries, Medi-Products recommends that the unit should not be located near explosive medical gas storage, open flame heaters, or electric spark-inducing equipment.

Statement of Liability for Medical Environments

- When used within a surgical environment, do not use in the presence of flammable anesthetic mixtures with air, oxygen, or nitrous oxide.
- This battery backup power system is not intended to support life or run life-supporting equipment but rather to power surgical appliances needed in superficial surgical procedures or medical cold storage appliances. Its use is intended for the supply of emergency power to appliances which may be employed in non-life-threatening medical procedures. It is imperative to understand that at no time should a patient remain unattended. At the time of this manual's writing, the FDA has no classification for a general-purpose medical emergency power supply. This system is not a medical device.
- All life-support type equipment, life-signs monitors, gas monitors etc. are expected to have their own built-in FDA approved appliance-specific energy sources and be maintained correctly. General room lighting and exit signs are also expected to have multiple independent energy sources.
- If life-supporting equipment is to be powered by any sort of electrical source or device, it is Medi-Products' expectation that several alternative independent power supply sources and devices be available.
- Appliances such as refrigerators and freezers, and the contents being stored within them, are the responsibility of the owner/operator to see that they are monitored, maintained and tested. Consequential damages and loss of perishable merchandise are not the liability of Medi-Products/Medicanix.
- It is the sole responsibility of the end user or equipment owner to ensure that the battery backup power system has been tested, maintained, and testing records have been kept and filed.

Installation

Pre-installation Steps:

1) Safety Considerations:

- Read these instructions carefully before attempting to install this product.
- Be sure to leave this manual for end user and save for local inspector's use.
- Observe all governing codes and ordinances.
- Proper installation is the responsibility of the installer.
- Product failure due to improper installation is not covered under the warranty.
- This product should not be altered in any way without manufacturer's consent.
- Be sure all hardwire electrical connections are done by a certified electrical contractor.
- Take special care when working with battery cables, connectors & terminals to make sure they are never short circuited.

2) Prepare and Check Installation Site:

First, Identify the area on site where you will be installing the system.

Check all measurements to ensure there will be no physical obstructions. The space directly in front of the unit will need to be accessible, to allow access to the display screen, and for AC outlet connections. Please note that if the system contains at least one extra battery pack, 8-12" of clearance will be necessary on the right side of system, to allow space for the **Battery Connecting Cord**. The necessary height and width requirements will vary with each model, please reference your specific model's spec sheet for this information.

Installation Steps:

These systems are designed such that the Main Unit (with the AC outlets for your appliances) will sit at the top, with all extra Battery Modules (if any) placed below. This ensures all battery modules are properly connected to each other, and to the main unit as well. Before installation, ensure that no modules have been powered on, this will be covered in the **Unit Startup Procedure**.

If your system contains any Extra Battery Module(s), begin by placing them first. After placing the first battery module, each following unit will nest onto the one below it, creating a securely stacked system. Once all battery modules have been placed, and are properly nested, the main unit can be placed in the same way.

The Main Unit will contain all necessary connections for the appliances being supported. Once the main unit has been placed, all connecting cords can be installed.

First, find all **Battery Connecting Cords**. These cords are approximately ~30" long and will connect each extra battery pack to the adjacent modules. Depending on the model number of your system, you will receive a different number of these cords. For example, if your system contains 3x extra battery modules (Model Number: SCS-24-8KWH), you will receive 3x battery connecting cords. First, find **Battery Expansion Port 1** located on the right side of the extra battery module. Begin by connecting the cord to the **Battery Expansion Port 1** of one battery module to **Battery Expansion Port 2** of the module above it, and repeat as many times as necessary. When connected properly, you will hear and feel a slight click, this means the cord has been connected successfully.

Start with the battery on the very bottom of the system, finishing by connecting to the single battery expansion port on the main unit at the top. All battery modules must be connected properly, to create one continuous chain.

Once all modules have been connected, the 10ft NEMA 5-15 power cord for the system can be connected. To find the port on the main unit, open the cover found above the battery expansion port on the right side of the system. The power cord can be connected to that port now, however, please wait to plug system into designated wall outlet at this time.

Please move to the next section to identify pertinent information for your system.

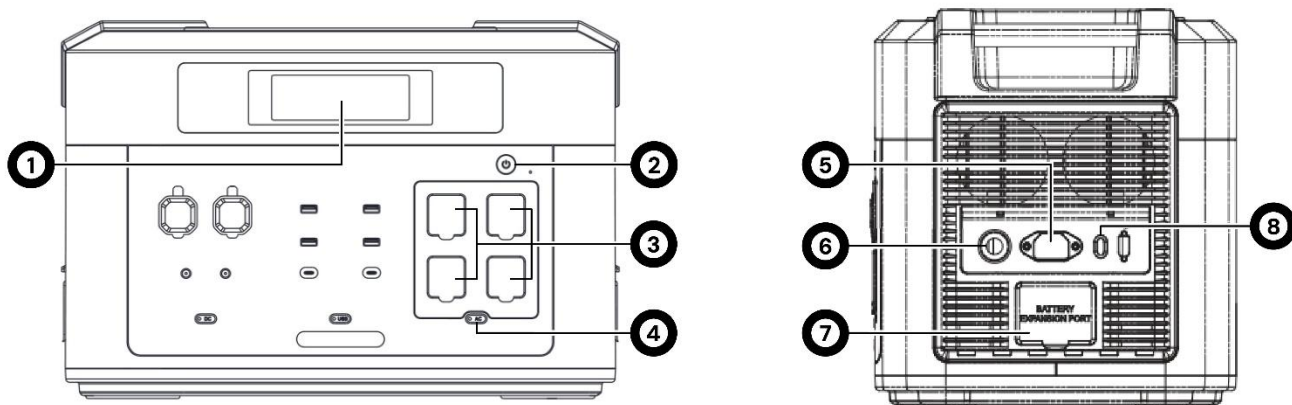
5) Additional Details:

Once the system has been installed, the system is ready to be plugged in and initialized. Before doing so, please see the following tables to determine any additional pertinent information for your system, based on the model number:

Rated System Wattage	2400 W
System Weight	51 lbs
Output Waveform	60Hz Pure Sine Wave
AC Charging Specifications	100-120v, 50-60Hz, 15A maximum
Transfer Time	<10ms
Battery Type	LiFePO4
Cycle Life	>4000 Cycles
Extra Battery Module Weight	40 lbs
Battery Capacity for each Module	2048 Wh
Charging Temperature Range	32°F - 104°F (68°F - 86°F Recommended)
Discharging Temperature Range	14°F - 104°F (68°F - 86°F Recommended)

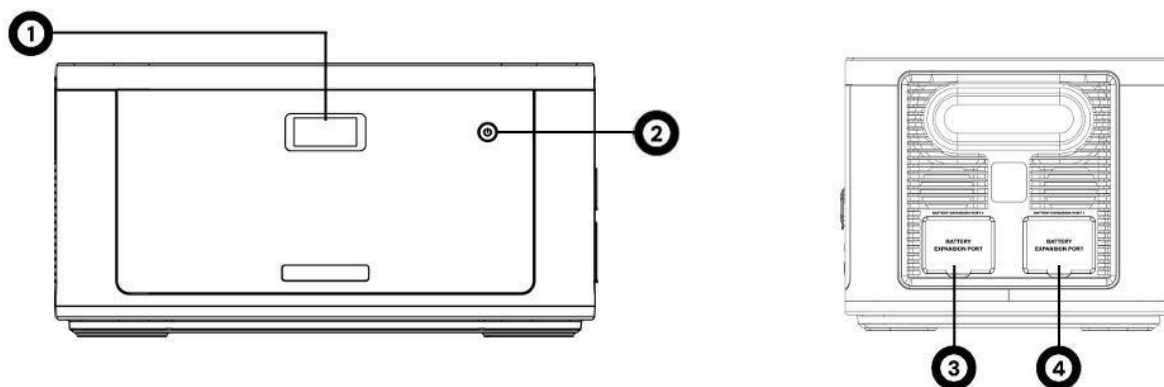
Model Number	Extra Battery Modules	Battery Capacity (kWh)
SCS-24-2KWH	0	2.05
SCS-24-4KWH	1	4.10
SCS-24-6KWH	2	6.15
SCS-24-8KWH	3	8.20
SCS-24-10KWH	4	10.25
SCS-24-12KWH	5	12.30
SCS-24-14KWH	6	14.35
SCS-24-16KWH	7	16.40

Please see the diagram below, with the accompanying table, to identify the various parts of the system's main unit:



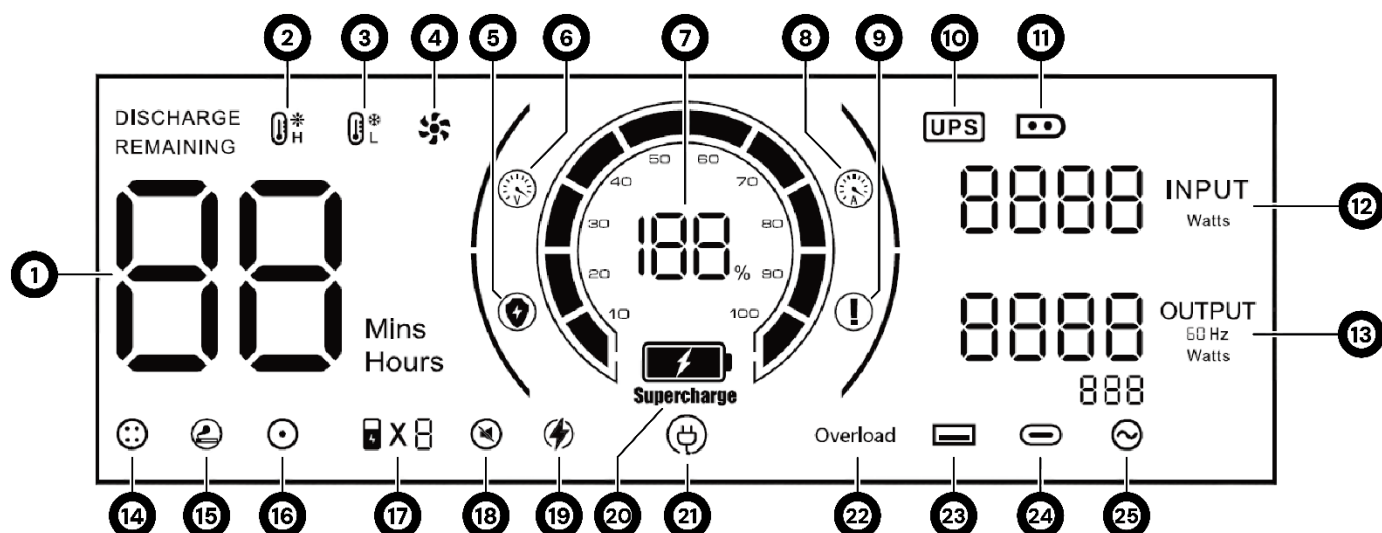
1 – Display Screen	5 – Main Power Cord Port
2 – Main Power Button	6 – Overload Protection Button
3 – AC Outlets	7 – Battery Expansion Port
4 – AC Switch	8 – AC Quick/Slow Charge Switch

Now, please see the diagram below, with the accompanying table, to identify the various parts of the system's extra battery unit:



1 – Display Screen	3 – Battery Expansion Port 2
2 – Extra Battery Power Button	4 – Battery Expansion Port 1

Please see the diagram on the following page, with the accompanying table, to identify the various icons on the Main Display screen:



1 – Charge / Discharge Time Remaining	14 – DC 24v Output Indicator
2 – High Temperature Alarm	15 – DC 12v Output “A” Indicator
3 – Low Temperature Alarm	16 – DC 12v Output “B” Indicator
4 – Fan Status	17 – Battery Expansion Icon
5 – Short Circuit Protection	18 – Silent Mode
6 – Voltage Protection	19 – E-Multiply Mode
7 – Power Status	20 – Fast Recharging Mode
8 – Current Protection	21 – AC Recharging Mode
9 – Battery Pack Protection	22 – Overload Warning
10 – UPS Function Mode	23 – USB Output Indicator
11 – PV / Car Recharging Mode	24 – PD Output Indicator
12 – Total Input Power	25 – AC Output Indicator
13 – Total Output Power	

Now that you are familiar with the various details, you are ready to move to the next section, to begin initializing your system. Please follow the procedure below to do so.

Unit Startup Procedure

Upon completing each step of the Installation process, follow these steps to start using your system. If at any point a step is unsuccessful, or you have any questions, please call our Technical Support line for assistance, at 1-800-765-3237.

Before you begin, ensure again that the system is unplugged from the designated wall outlet, and all modules are powered off. Also take this time to identify the position of the **AC Quick/Slow Charge Switch**, ensuring it is set to the **Slow** mode (Switch is in “up” position).

- 1) If installation procedure was followed properly, all modules will be connected via the Battery Connecting Cords, and the main power cord will not be plugged into the designated wall outlet.
- 2) To power the system on, press and hold (~4 seconds) the **Main Power Button** found on the main unit at the top. This will power on all modules. Check each module's **Display Screen**, looking for the **Battery Expansion Icon** to be present. If the system has more than one extra battery module, ensure the number the icon shows matches the number of extra battery modules in your system.
- 3) Next, to enable the AC outlets, press the **AC Switch** found below the AC outlets. To confirm if the AC outlets are enabled, look for the **AC Output** icon to be present on the main **Display Screen**.
- 4) Plug in an appliance to one of the unit's AC outlets and ensure that your appliance will run on battery power. Once appliance is plugged in, you will also begin to see numbers change in the **Total Output Power** section of the **Display Screen**. This number indicates the output power being used by the appliances.

Note: If you are powering a refrigerator or freezer, make sure you test it long enough to see that the appliance's compressor turns on. You can speed this process up by opening the door of the appliance.

- 5) Once the output has been verified, apply main power to the system. Do this by plugging in the system's power cord to the designated wall outlet. The system will now pass-through power to the load and charge the batteries at the same time. Once plugged in, you will again see numbers begin to change, in the **Total Input Power** section of the **Display Screen**. This number indicates the input power being used to charge the batteries as well as passing through to the appliances. You will also see the **UPS Function Mode** icon present on the main **Display Screen**.

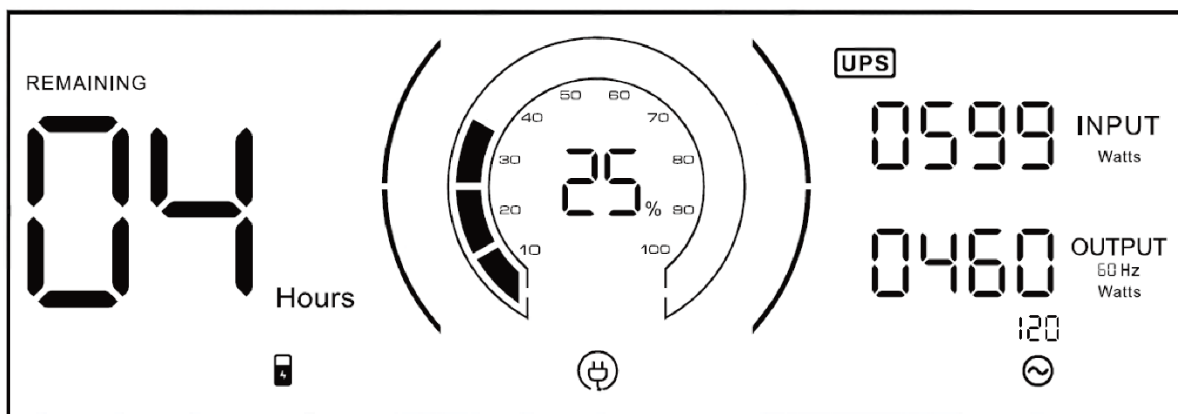
6) Again, verify that the appliance is still receiving power.

7) The system is now operational and has been verified to work solely on battery power, as well as the main power supply from the facility.

Operation

During normal operation, the system shall be plugged into the designated wall outlet, and main power is available. When this is true, the display screen will display the amount of time needed to recharge the system's battery, in the **Charge / Recharge Time Remaining** section. The **Power Status** will also show the current battery percentage, and the **AC Recharging Mode** icon will appear. During typical operation, with your appliance being powered by the battery backup system, the **Total Input Power** and **Total Output Power** values will fluctuate. With the appliance being powered, the **AC Output** indicator will also be present.

Please refer to the diagram below to see how the display screen may typically look:



This display screen details a system that is currently plugged into the designated outlet and charging, while powering an appliance at the same time. The display shows that the battery will be fully charged in 4 Hours, indicated by the information on the left side of the display. There is 1x extra battery module, indicated by the **Battery Expansion Icon**. The battery is currently at 25% level, indicated by the **Power Status** in the center of the display, with the **AC Recharging Mode** icon directly below. With the system plugged into the designated outlet, and an appliance plugged into the included AC outlets, the system is in **UPS Function Mode**

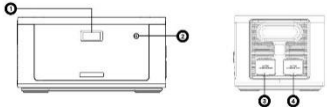
indicated by the icon to the right of the **Power Status**. The system is currently consuming 599 Watts from the main supply, and providing 460 Watts to the appliance connected, both detailed by the information on the right side of the display. Finally, the included AC outlets are outputting the proper 120v power, indicated by the **AC Output Indicator** in the bottom right corner of the display. Please keep in mind this is an example display; the information will vary depending on the details of each installation.

If any problems are encountered when checking the system's display throughout its life, please contact our technical support line, at 1-800-765-3237, for troubleshooting assistance.

To identify any immediate errors with system, please move to the next section, which details any common errors, and their causes.

Troubleshooting

Icon	Icon Status	Cause	Solution
	Solid	Internal temperature of system is high.	Disconnect device, and power off. Let device sit and cool before restarting.
	Solid	Internal temperature of system is low.	Disconnect device, and move to a location with a more acceptable environment.
	Solid	Voltage Protection enabled. Overvoltage has been detected at internal battery input.	Disconnect input terminal, check that input voltage is within allowable range (100-120v), then reconnect.
	Solid	Current Protection enabled. A BMS charge/discharge	Disconnect the input terminal and power down, then reconnect. Disconnect output terminal and power down, then reconnect.

		overcurrent error has occurred.	
	Solid	Short Circuit Protection. A BMS failure has occurred.	Contact Medi-Products Technical Support.
	Solid	Battery Pack Protection has been enabled. A battery pack failure, or BMS communication error has occurred	Contact Medi-Products Technical Support.
	Blinking	AC Input is abnormal.	Check if AC input wattage is acceptable. Check power cord connection.
	Blinking	Error has occurred on AC output 	Check the load of connected appliance(s). Check connection to AC output receptacle.

Qualified Technical Support

A large amount of energy is stored in the batteries which can cause injury to unqualified persons attempting to effect repairs. Also, no one untrained regarding electrical energy should attempt any service task or remove any covers, as live circuits will be exposed in all cases.

Eye protection should be worn by any person connecting or disconnecting batteries and/or battery cables. Hand & Eye Protection is recommended for any person handling batteries.

If at any time a problem arises, be as diligent as possible to record any indicators that may be present, and call our Technical Support line when possible.

Testing Procedure

Standards of testing the power system must be implemented and carried out along with your regular testing policies.

Medi-Products sets out the following guidelines and instructions that must be understood and implemented for the use and dependence on our battery backup generators.

Weekly, and Monthly load tests must be performed, recorded and documented. The following criteria must be followed to complete each test:

Weekly Testing:

The recommended weekly test is a quick and simple test which assures the functionality of the transfer switch, auto-invert and charge modes.

This test is performed by disconnecting the power that feeds the battery backup unit, by unplugging its power cord. Upon disconnecting the feed power, your system should switch over to invert mode and draw its power from the batteries. At this point, you should be sure your equipment is still on and running.

Note: If you need to find out your “runtime” contact technical support with your power system’s model and serial number and the make and model of the refrigerator or freezer you are supporting.

After you have ensured that your system has switched over and is inverting, you will need to restore the main power (or plug the system back in). This test should not last more than 2 to 3 minutes.

Monthly Testing:

The monthly test is a load test that needs to be conducted no sooner than 20 days and no longer than 40 days from the prior (monthly) load test. This test is to ensure the battery backup can last 25% of its intended runtime. Your runtime is a predetermined amount of time that your refrigerator will run on the battery backup. This would have been calculated at the time you purchased the unit.

Example: 12 hour run time = Monthly test 3 hours

For the week you are performing the monthly test, it is not necessary to also perform the weekly test.

Another important issue to take note of is that it is possible to over test your power system. Medi-Products battery backup systems use lithium-ion batteries, which if discharged too frequently or discharged too deeply, can cause damage to the batteries, shortening their life expectancy and weakening the health of the battery.

You may want to set a timer to remind you to restore the input power to the system and not over discharge the batteries. Reconnect the input power and recharge the battery bank. This may take several hours.

Record Keeping:

Recording these tests is important for the protection of your vaccines and costly inventory. You can use our example test logs on the following page, and can download more from our website if needed.

Weekly Test Log:

Date:	Test Start Time:	Test End Time:	Status:	Tested By:

Monthly Test Log:

Date:	Test Start Time:	Test End Time:	Status:	Tested By:

Maintenance Procedure

The Medi-Products system contains virtually no moving or lubricated components and therefore requires almost no user maintenance aside from testing / recordkeeping.

The user should be aware that by their nature, battery life is negatively affected by some usage patterns. Of course, batteries are intended to be used, but minimizing deep discharges, and frequent charge / discharge cycles will extend overall life. Their life expectancy will be generally in the range of ten years. Please refer to the section on Battery Testing for more on this subject.

The system has a low battery alarm which will sound when the battery voltage drops below a set value. System display screen should be checked to determine status, if the alarm sounds. Often a low battery alarm will result from a tripped input supply breaker in the main building electric panel. If this is not the cause, please contact Medi-Products promptly.

Unit Shut Down Procedure

If the system needs to be turned off for any reason, please follow these steps:

- 1) Begin by ensuring all connected appliances are powered via different means while the system is being disconnected, to avoid any damage or loss of power.
- 2) First, disconnect the system's power cord from the designated wall outlet. Before disconnecting any more cables, ensure all modules are powered off. Do so by pressing and holding (~4 seconds) the **Main Power Button** found on the main unit at the top.
- 3) Now, the rest of the system's cables can be disconnected, if any. Disconnect the **Battery Expansion Cables** one by one, working from the bottom to the top. Note, while disconnecting these cables, the modules may turn back on. If they do, simply turn the module(s) off again, then continue disconnecting the cables.
- 4) Once all cables are disconnected, and each module is powered down, the system has been successfully powered down. You can now move the system as you please, if necessary.
- 5) If desired, follow the **Installation Steps** and **Unit Startup Procedure** again to re-commission the battery backup system.

Warranty Activation Form

Medi-Products warrants that your Emergency Power System is assembled using high quality components and workmanship and is free of defects in material and workmanship. This warranty shall remain in effect for two (2) years from the date of the original consumer purchase of the inverter.

THIS WARRANTY DOES NOT COVER:

- 1) Replacement parts or labor furnished by anyone other than Medi-Products approved service agent. (All approved agents should be licensed electricians or bio-medical technicians or as specifically approved).
- 2) Defects or damage caused by labor furnished by someone other than Medi-Products or an approved service agent.
- 3) Any malfunction or failure of this product while it is in the possession of the owner during the warranty period, if the malfunction or failure is not caused by a defect in material and workmanship of Medi-Products, or if the malfunction or failure is caused by unreasonable use, including the failure to verify the equipment's utility and usefulness prior to emergency conditions.
- 4) Normal battery depletion.

ALSO:

- 1) This warranty is non-transferable to other owners of the product during the warranty period without the express written consent of Medi-Products.
- 2) Medi-Products reserves the right to repair, replace, or allow credit for any material returned under this warranty. Any damage caused by the customer will be charged or deducted from this allowance.
- 3) All warranty work will be performed at Medi-Products factory or using a valid Warranty Authorization Number (WAN) prior to repair. Products shall be delivered to Medi-Products factory freight prepaid and fully insured.

The inverter manufacturer's owner's manual is provided. The owner should become conversant with it and with this owner's manual. Before operating your system be sure to read these safety instructions.

TO INITIATE YOUR WARRANTY PLEASE COMPLETE THIS FORM AND RETURN WITHIN 30 DAYS

It is recommended that you keep a copy of this activation form for your own records.

Model Number: _____

Serial Number: _____

Date of installation: _____

Facility Name: _____

Contact Name: _____

Phone Number: _____

Fax Number: _____

Email Address: _____

Address where System is installed:

Scan and email this form to sales@mediproducts.com, or you can mail it to
Medicanix Inc. 281 Fields Lane, Suite 2B, Brewster, NY 10509.



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