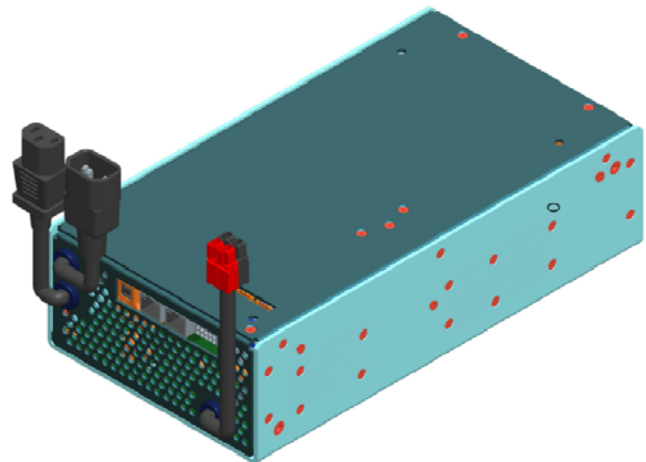


Medipower Mobile Power System Installation and Operating Manual SPS4450-LF/ SPS4450-1-LF



(Including Battery Box Models SPS4451, SPS4452, SPS4453-LF)

Fully tested, certified and compliant with:

UL60950-1:2007, CAN/CSA C22.2 No. 60650-1-07, UL60601-1, CAN/CSA C22.2 No. 60601-1-07 (pending) by



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Medipower Series

Installation and Operation Manual

This manual is intended to provide operational guidance and installation instructions of the TDI Power MediPower series Mobile Power System. Features of all the SPS4450-LF / SPS4450-1-LF series power system configurations and their relative accessories, as well as some typical applications are illustrated.

1. Medipower Series Overview

The Mobile Power System is comprised of a Power Supply Module, a Battery Module, a Remote User Interface (RUI) and software to display a Graphical User Interface on the users host computer to monitor battery and power status. These components form a portable AC power source that will support any number of electrical devices that are installed on a Medical or Information Technology mobile cart. The Mobile Power System features a PC enabled remote user interface that provide the user full visibility of the systems health and state of charge.

There are two standard Power Supply Modules with associated RUIs along with a number of battery packages. An optional “pole mount” kit allows the power Supply module and battery package to be mounted to a central pole as featured on some medical cart designs.

The SPS4450-LF Power Supply Module features panel mounted integral connections for AC input, AC output and battery connections whereas SPS4450-1-LF has these connections on flexible leads

2. Important Safety Instructions – Save These Instructions

This manual contains important instructions for using the MediPower product. These should be followed during set-up, use and maintenance. Failure to follow these instructions could result in injury, death or equipment damage.

This product is not approved to, or designed for critical care, life support or patient contact applications. Use as such is strictly prohibited. It is intended for use in an indoor controlled temperature area, free of conductive contaminants.

Do not disassemble the Power Supply Module chassis or any of its associated assemblies. With the exception of the field replaceable battery box unit (BBU), there are no user-serviceable parts, including fuses.

Hazardous live parts inside the enclosure remain energized even when the unit is in Output Inhibit mode. Components remain energized by the battery module even when the input AC power is disconnected. Attempting to service the system could cause electrical shock or fire. Only qualified service personnel should attempt BBU replacement.

When performing maintenance (such exterior cleaning and BBU replacement) switch the Output Inhibit to off, and unplug the input AC power cord to reduce the risk of electrical shock. To reduce the risk of damage to the cord or electric plug, always disconnect the AC input power cord by grasping and pulling the plug shell and not the cord. For the Flexible lead version please ensure that both Plug and sockets are appropriately held during plugging and unplugging actions to prevent damage to any cables.

Do not operate the portable power system if it has received a sharp blow, dropped or is damaged in any way. Take it to a qualified service person. To reduce the risk of overheating or fire, keep the ventilation openings clear. Do not attempt to replace the individual batteries within the BBU. Use only replacement batteries specified or supplied by TDI Power.

Cautions and Warnings

Caution: Do not operate the Power Supply Module without connecting it to a Battery Box Unit (BBU) and the Remote User Interface (RUI). The Power Supply Module will not operate properly without the BBU and RUI connected, whether or not utility power is connected.

Warning: Do not allow objects to come in contact with the Power Supply or Battery Modules' DC contacts. Do not short or bridge these terminals together or serious personal or equipment damage may result.

Warning: When operating the system from AC mains or recharging the internal battery module always connect the Power Supply Module to a properly grounded, three terminal AC outlet. Proper grounding can only be assured if the AC plug is connected to a wall outlet that is hospital grade.

Caution: Never use extension cords to connect the Power Supply Module to an AC outlet.



Federal Communications Commission Warning

This device complies with FCC Part 15, Class Rules and Regulations. The limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio-frequency energy and, if not installed and used in accordance with the installation manual, may cause harmful interference to radio and television communications. Do not use the equipment in contact with magnetic storage equipment, since this may cause data corruption. Operation of this equipment in a residential area is likely to cause interference, in which case the user will be required to correct the interference at his or her own expense. Do not attempt to repair or modify this equipment. Transistor Devices Inc. or its authorized representative must perform any repairs to the unit.

Safety Approval, UL/CSA 60601-1*

Medical Electrical Equipment. Classification: Class 1. No applied Parts. Ordinary equipment. Enclosed without protection against ingress of water. No sterilization or disinfecting required. The equipment is not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

Safety Approval, UL/CSA 60950-1*

Information Technology Equipment

This standard is applicable to mains-powered or battery-powered information technology

equipment, including electrical business equipment and associated equipment, with a RATED VOLTAGE not exceeding 600 V

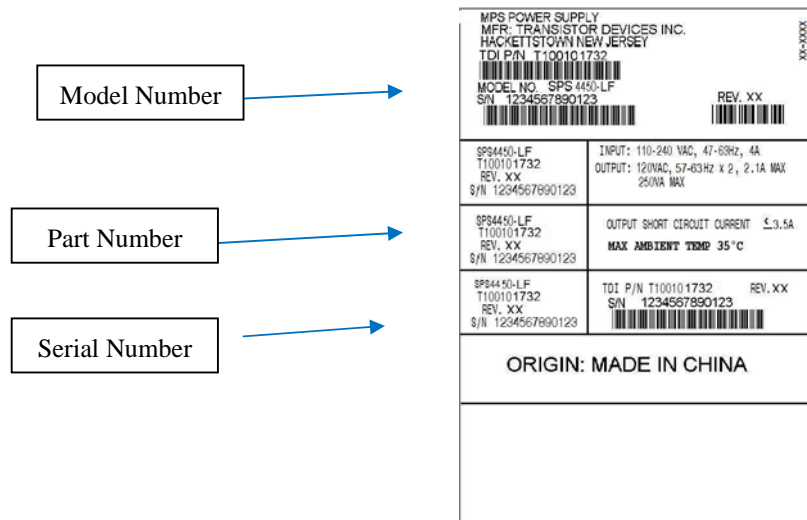
(* Safety Approvals applicable to SPS4450-LF version. Approvals for SPS4450-1-LF to be obtained)

HELP DESK SUPPORT

TDI's Help Desk is available when you need answers for routine troubleshooting questions. It is staffed Monday through Friday, 8:00 am to 5:00 pm Eastern Standard Time. Telephone (908) 850-5088.

The following information will be requested when you call:

- Company name who purchased the Power System
- Organization name who is using the Power System
- Caller's Name
- Caller's Phone Number
- Caller's e-mail address
- Model Number, Part Number and Serial Number
(See label below for location)
- Problem Description



If the Help Desk technician requests that equipment be returned to TDI, please follow the instruction under Returns below.

Returns – Complete Power Systems or Battery Box Unit (BBU)

For power system or battery module returns you will be sent, via email, a replacement request form. Complete and sign the form, then return it by fax or e-mail. You will then receive, by e-mail, an RMA number (Return Materials Authorization) and shipping instructions.

For battery box assembly returns, the worn BBU is to be returned within 5 business days after receipt of the replacement BBU.

Power System Operating Environment

The Power Supply Module features protection fuses connected in both of the AC input connections, Line and Neutral. This feature enables the power supply module to be used with electrical systems that have either a grounded neutral conductor (as is typically found in the United States and Canada) or systems that do not have a grounded neutral connection.

The Medical-Grade Mobile Power System is designed for installation on portable computer and medication carts utilized in hospitals or other medical settings. It is designed for use within patient vicinity but is not approved for applications that could potentially come in contact with patients.

The Mobile Power System should only be operated indoors, in a controlled environment. It should be kept away from excess heat, moisture, dust or other contaminants.

Best performance is achieved for ambient temperatures between 32°F and 95°F (0°C to 35°C).

A minimum of 1" clearance should be provided around at least two sides of the Power Supply module, in addition to the fan opening, for adequate ventilation.

Equipment Connection Warnings

Use of this equipment in life support applications where failure of this equipment can reasonably be expected to cause the failure of the life support equipment or to significantly affect its safety or effectiveness is prohibited. Do not use this equipment in an explosive environment which may contain a flammable anesthetic mixture with oxygen, nitrous oxide or similar gases.

The Mobile Power System is designed to accept connection of equipment mounted on the same mobile cart. Connecting equipment which is not mounted on the same cart as the Mobile Power System can pose a safety hazard.

Do not connect surge suppressors or extension cords to the output of the Mobile Power System. This may damage the system and void the surge suppressor and Mobile Power System warranties.

Battery Module Warnings

Do not allow objects to come in contact with the Battery Module's connection terminals. Do not short or bridge these terminals together or serious personal injury or property damage may result.

So as to avoid dangerous arcing, never disconnect the BBU from the Power Supply Module while the system is operating, either when charging the battery from utility wall power or when providing cart AC power from the battery.

The Battery Module contains no user serviceable components. Never open the Battery Module for any reason so as to avoid the potential for electrical shock or arcing.

All batteries will eventually wear out and require replacement. Battery life is dependent on a number of factors, including usage patterns, battery chemistry and temperature. When batteries reach the end of their usable life and no longer provide adequate run time, the entire Battery Module must be replaced or serviced by TDI Power authorized personnel. Please contact TDI Power or an Authorized TDI Distributer for battery replacement services.

Labeling Symbols

AC Voltage: V~

DC Voltage: V ---

Electric Shock Hazard: ⚡

3. System Set-Up

Unpacking Instructions

Please insure your safety and product quality by completing the following:

1. Before unpacking contents please inspect all packaging to make sure there is no visible damage. If damage is observed contact shipper or call TDI support at (908)-850-5088.
2. Cut sealing tape and open carton marked SPS4450-LF/ SPS4450-1-LF. The relevant box should contain:

SPS4450-LF (Integrated Connector)	SPS4450-1-LF (Flexible lead)
Power Supply Module	Power Supply Module (-1-LF version)
Display RUI	Display RUI with enable switch
10 conductor BBU interface cable	10 conductor BBU interface cable
4 Conductor BBU power cable	4 Conductor BBU power cable
RJ45 Interconnect cable	RJ45 Interconnect cable
Hospital Grade AC Line cord	Second RJ45 Interconnect cable

Note: GUI interface software and a .pdf of this manual are available to download from

<http://www.tdipower.com>

Battery Box Unit BBU Configurations

There are three (3) standard configurations of the BBU:

Model Number	Chemistry	Watt-Hour Capacity	Approx. Size
SPS4451	Sealed Lead Acid	420W-hr	7.0"x 9.2"x 11.25"
SPS4452	Sealed Lead Acid	624W-hr	7.0"x 9.2"x 11.25"
SPS4453-LF	Lithium Iron Phosphate	492W-hr	4.75"x 7.50"x 11.25"

(battery boxes are packed in their own packaging for shipment)

4. Power System Mechanical Mounting



WARNING!

Mount the Power Supply Module and the Battery Module to the cart BEFORE connecting them together or to an input power source. It is the user's responsibility to assess whether mounting method is sufficient and secure enough so as to not present a Safety Hazard before the cart is put into service. The mounting brackets, if included, are designed to support TDI Power Medical-Grade Mobile Power System components ONLY. Do not mount or place any other devices on the mounting brackets. The mounting brackets will not support the additional weight and may fail.

Failure to follow these warnings may lead to product damage and/or risk of personal injury.

The TDI packages come with dedicated mounting points to allow the products to be fixed into a system in a flexible manner – see appropriate following drawings defining customer fixing points. The user must determine the fitness of mounting including the mounting materials, hardware and procedures before attempting any component mounting. If there are any doubts about the suitability of any mounting please contact TDI Power or a TDI Power Authorized Distributor for assistance.

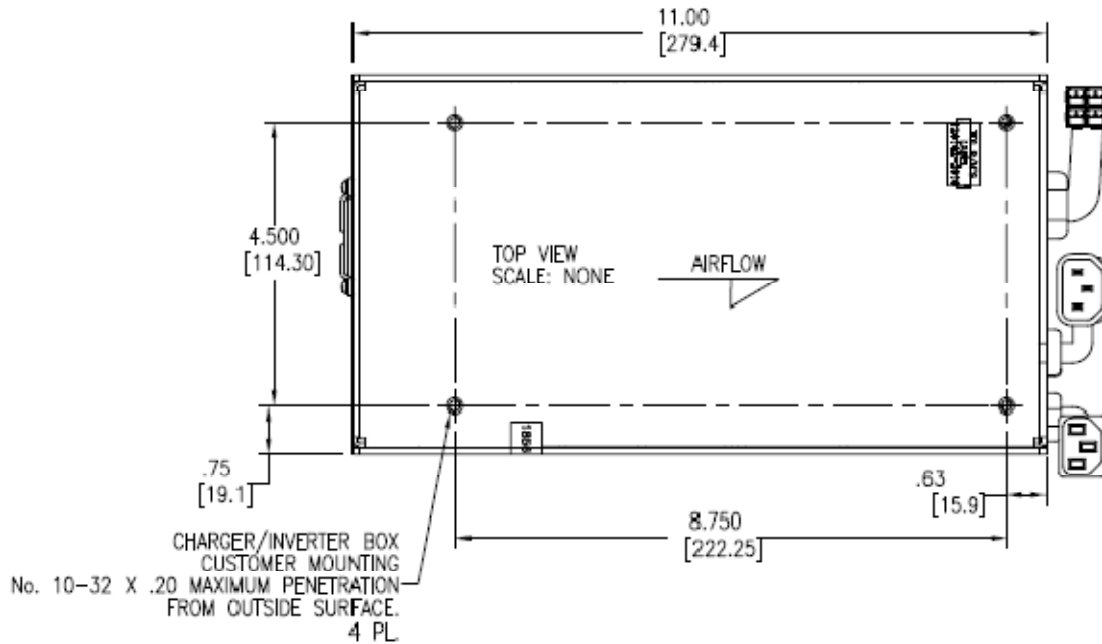
TDI Power offers an optional Mono-pole mounting accessory (SPS5923-LF) for the TDI Power Medical-Grade Mobile Power System to suit multiple cart types and configurations. Diagrams are provided on the following pages illustrating typical mounting configurations in a Mono-pole type application. For additional mounting options please consult factory.

Mounting using standard fixing points

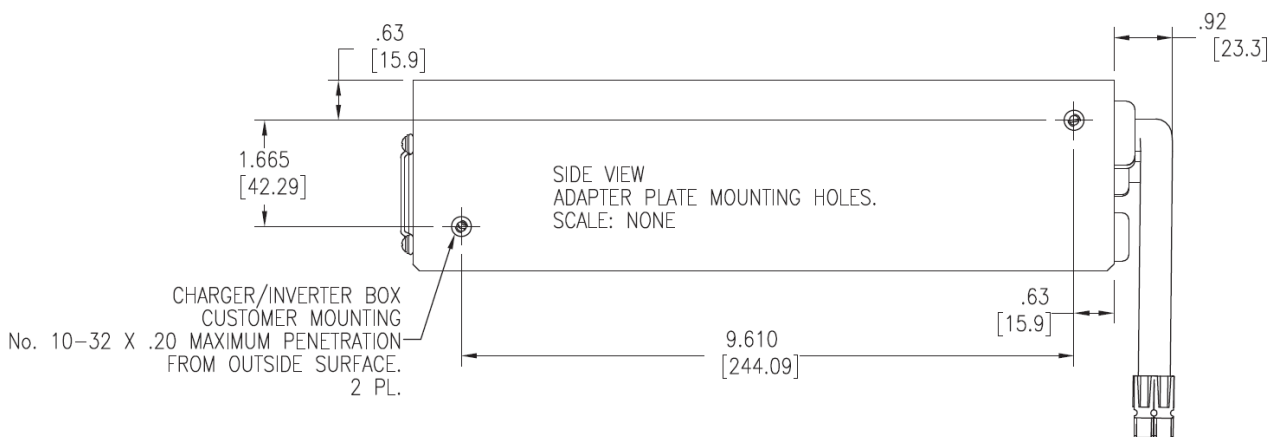
Power Supply Module

Both power supply module types have the same fixing hole arrangement, with threaded inserts on three faces.

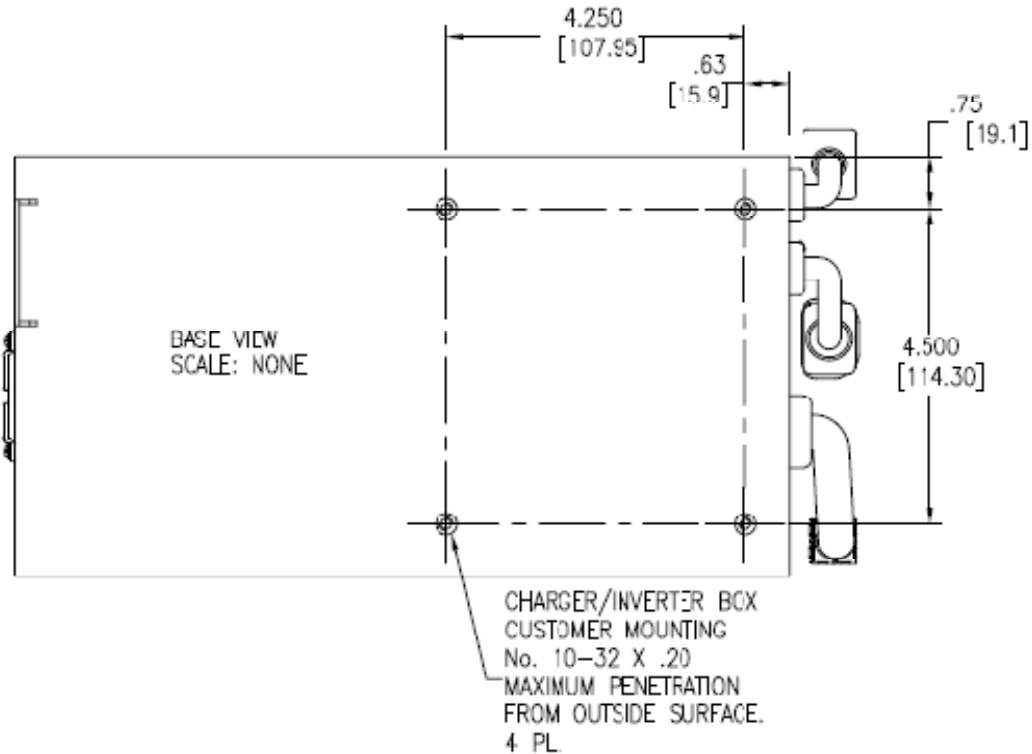
On the top face



On the side face



And on the bottom face



TDI Power recommends that a minimum of four fixing points are used.

Warning do not use fixing screws that will project into the unit more than 0.2"

The user must determine the fitness of the mounting materials, hardware and procedures before attempting any component mounting. If the materials, hardware or procedures are not suitable for your application, please contact TDI Power or a TDI Power Authorized Distributor for assistance. The mounting location should ensure that airflow through the units is not unduly restricted and that the cables connected the system can be adequately routed and secured into place.

Remote User Interface

The remote user interface can be fixed in an appropriate location for the end user of the cart using the fixing points provided

Mounting on a Center Mono-Pole

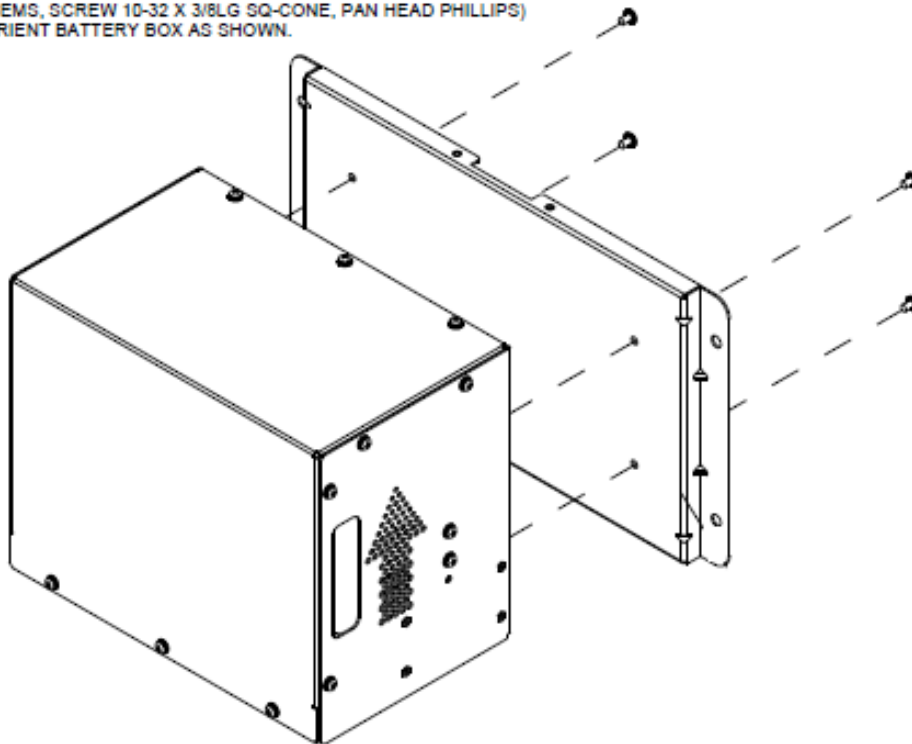
The user must determine the fitness of the mounting materials, hardware and procedures before attempting any component mounting. If the materials, hardware or procedures are not suitable for your application, please contact TDI Power or a TDI Power Authorized Distributor for assistance.

The optional mono-pole mounting accessory is compatible with either of the Power Supply Module types and any one of the battery box types. Any combination is acceptable

Power Supply Module	Battery Box
SPS4450-LF (Integrated Connector)	SPS4451 420W-hr SLA
SPS4450-1-LF (Flexible Lead)	SPS4452 624W-hr SLA
	SPS4453-LF 492W-hr Li Ion

1 Power Supply and Battery Module Mounting

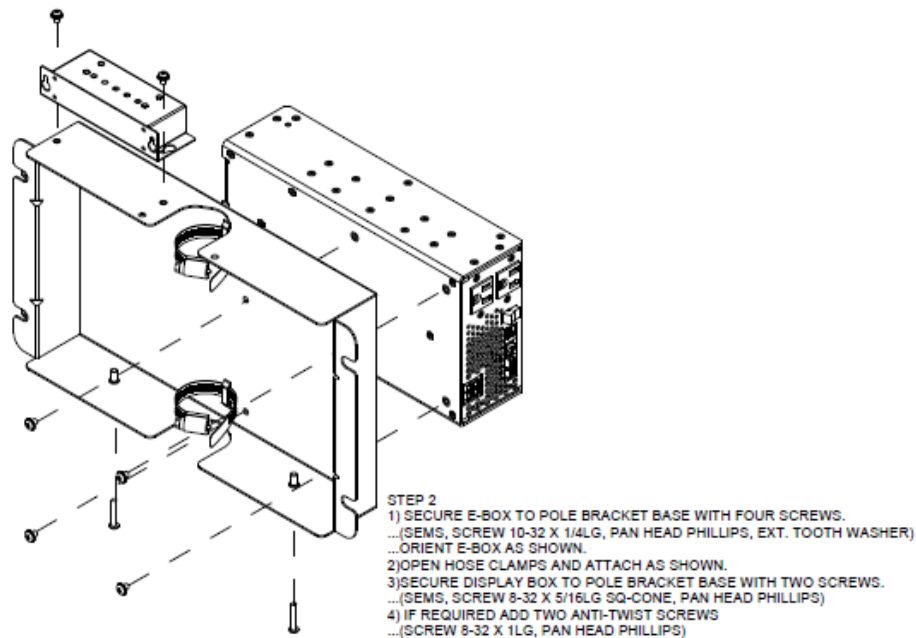
STEP 1
SECURE BATTERY BOX TO POLE BRACKET COVER WITH FOUR SCREWS.
 (SEMS, SCREW 10-32 X 3/8LG SQ-CONE, PAN HEAD PHILLIPS)
 ORIENT BATTERY BOX AS SHOWN.



1A Attach the Power Supply Module to the mounting bracket using the hardware provided with the mounting accessory. Please follow the diagram regarding module (outlets facing up) and bracket orientation.

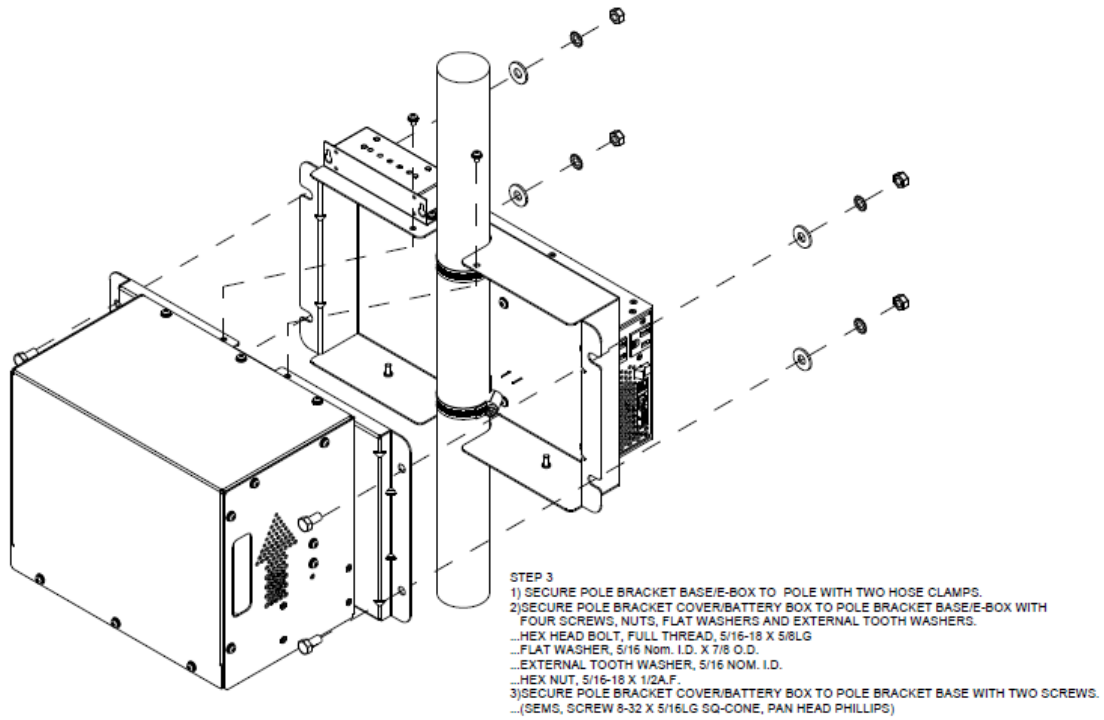
Attach the indicated hardware to the bottom of the mounting bracket and fully tighten the screws.

1B With the help of an assistant, lift the Power Supply Module / mounting bracket assembly and place it around the carts center



pole, as shown. (Note: Since the mounting bracket is designed to accommodate a wide variety of center pole sizes, attach the screw clamps as described in step 1C.) When lowering the mounting bracket into place, make sure that the screws on the bottom of the bracket engage the cart's legs in order to prevent the retrofit kit from rotating around the cart's center pole. To minimize rotation, make sure the side of the mounting bracket is perpendicular (90°) in relation to one of the cart's legs, as shown in the "Top View" diagram. Lift and readjust if needed.

1C To secure the mounting bracket to the center pole, wrap the two screw clamps (included in the mounting hardware kit) around the cart's center pole and through the raised slots on the mounting bracket. Use a screwdriver to fully tighten the clamps.



1D With the help of an assistant, lift the Battery Module and attach it to the Power Supply Mounting Bracket Assembly as shown, using the mounting flanges and provided hardware.

2 Remote User Interface (RUI) Mounting

Mount the RUI to the top edge of the mounting bracket with the provided screws.



5. Electrical Interconnections

AC Mains Cable

Insert IEC 60320 type, hospital grade line cord into connector as shown below. Make sure it is fully seated. For the SPS4450-1-LF version the IEC 60320 inlet connector is on a flying lead.



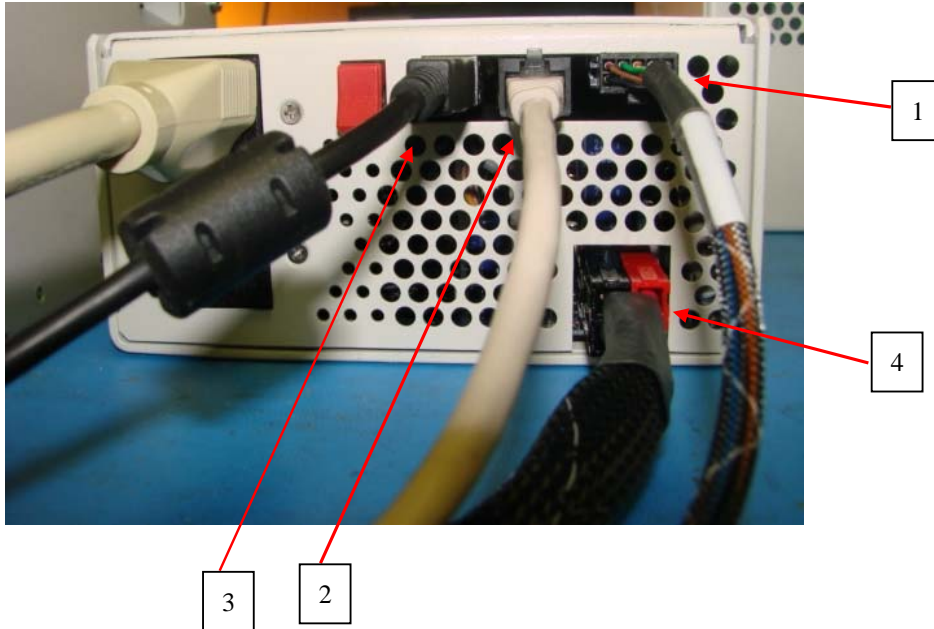
CAUTION!

The Power Supply Module should be grounded by connection to a suitable Hospital – Grade AC outlet with the appropriate AC line cord.

Power Supply Interface Cables

1. Insert one end of Molex Micro-fit type 10 pin connector into J511 socket.

2. Insert one end of the RJ-045 cable from the RUI into socket J507. For SPS4450-1-LF version insert the second RJ-045 cable into the second socket.
3. Insert USB type B connector from host computer into socket J514 (cable not supplied)
4. Insert 4 connector Anderson Powerpole style Red and Black battery supply cable into socket labeled P104. Observe color coding and polarity. For SPS4450-1-LF version the battery connections are on flying leads.



Note: Photo shows SPS4450-LF version

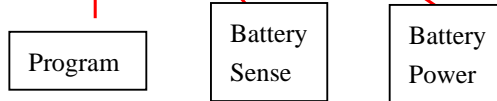
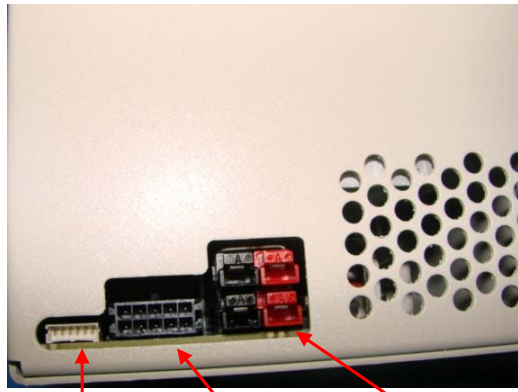
Battery Box Unit BBU Configurations

There are three (3) standard configurations of the BBU:

Model Number	Chemistry	Watt-Hour Capacity	Approx. Size
SPS4451	Sealed Lead Acid	420W-hr	7.0"x 9.2"x 11.25"
SPS4452	Sealed Lead Acid	624W-hr	7.0"x 9.2"x 11.25"
SPS4453-LF	Lithium Iron Phosphate	492W-hr	4.75"x 7.50"x 11.25"



SPS4453-LF connector location (For reference)



Remote user Interface

Connect the RJ-045 cables to the remote user interface, one cable for the SPS4450-LF version and two cables for the SPS4450-1-LF version, taking care to ensure cables connect to corresponding connectors at each end, A to A and B to B.

6. Operating the system

Charge the Battery Module

When the Power Supply Module is plugged into a live AC wall outlet, it will automatically charge the Battery Module. The LED display will continue to strobe from left to right, even if the batteries are fully charged, to indicate AC input power is applied.

Battery Modules continuously left in a discharged state will suffer a permanent loss of capacity.



The Power Supply Module must be plugged into a live AC utility wall outlet for a minimum of 3.5 hours after installation to fully charge the batteries. If the Power Supply Module is plugged in and turned on, any connected equipment will receive AC power. However, connected equipment may not receive full battery backup runtime when the Power Supply is mobile (disconnected from an AC outlet) until the BBU is fully charged.

Plug AC Equipment to be powered into the Power Supply Module's Outlets

The Power Supply Module provides filtered, pure sine-wave 120VAC power for a variety of equipment, including computers, monitors, diagnostic devices, scanners and more. Connected equipment power must be maintained at less than 250W in order not to exceed the Power Supply's rated capacity.*

** To determine any connected equipment VA rating, look on its nameplate. If the equipment is rated in amps, multiply the number of amps by 120 to determine the equivalent watts.*

CAUTION!

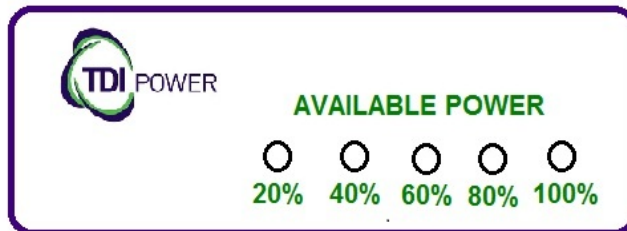
The Power Supply will not provide full power to connected equipment if the Battery Module is fully discharged.

Mobile Operation (Unplugged / Battery Discharging)

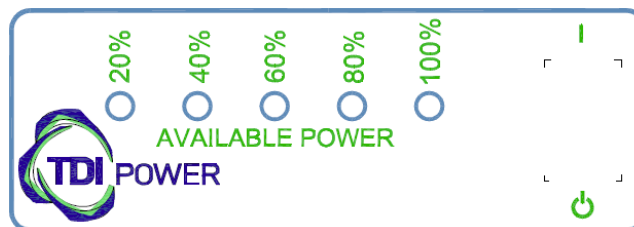
Unplug the Power Supply Module from the AC wall outlet. Ensure the cord is safely stowed aboard the cart to reduce the risk of entanglement and damage.

With its battery properly charged, the Mobile Power System provides clean AC power to run equipment connected to its output. The run time between charges is dependent on battery and environmental conditions as well as the power consumption of the connected equipment. As the Battery Module's charge is depleted, the Battery Charge LED Meter will indicate the approximate charge level, as detailed below.






To turn the Power Supply Module's outlets (and any connected equipment) OFF and stop the battery from discharging, press the "Power" button for one second. The alarm will beep once briefly after one second has passed. Release the button. All LED's will be OFF, indicating the Power System has shut down. For the SPS4450-LF version the "power" button is on the end of the power module next to the interconnect cables and for the SPS4450-1-LF version the "Power" button is located on the Remote User Interface



RUI without switch



RUI with switch

Battery Charge LED Meter Display						
Approximate Battery Charge Level						Low Battery Alarm*
80 - 100%	Red	Org	Org	Green	Green	OFF
60 - 80%	Red	Org	Org	Green	OFF	OFF

40 - 60%	Red	Org	Org	OFF	OFF	OFF
20-40%	Red	Org	OFF	OFF	OFF	OFF
<20%	Flashing Red	OFF	OFF	OFF	OFF	ON

The low battery alarm will beep once per second unless it is silenced by pressing the “Alarm Mute” button. Once the charge level falls below 20% (and shutdown is imminent) the alarm will resume again after one minute. The user should save any open files and immediately safely power down any connected equipment.

Switch Operation

The ACC PWR switch (“power switch”) turns the Power Supply Module’s outlets (and any connected equipment) on and off. It enables and disables the inverter module, it does not remove power from the battery charger when the system is connected to an AC source.



To turn the Power Supply Module’s outlets ON: Press the “Power” switch up to the on I position. The “Power” switch will turn the outlets on, regardless of whether the Power Supply Module is plugged in to an AC source, or not.



To turn the Power Supply Module’s outlets to Standby: Press the “Power” Switch down to the standby position

Stationary Operation (Plugged / Battery Charging)

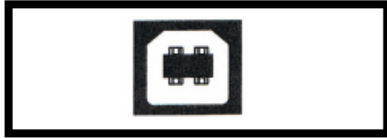
Plug the Power Supply Module into a live AC wall outlet. The Power Supply Module will deliver AC power to connected equipment while simultaneously charging the Battery Module. Note: The LED display will strobe from left to right (Red to Green) as long as AC input power is applied, signifying the charger is receiving input power even though the batteries may not require recharging.

Connected equipment can be used indefinitely as long as the Power Supply Module is connected to a live AC outlet. If utility power fails due to a blackout, server brownout, or other cause, the Power Supply will automatically support connected equipment with AC power sourced by the Battery Module (if it is adequately charged). When utility power returns, the Power Supply will automatically resume supplying AC power and recharging the Battery Module.

**It is recommended that the Power Supply Module be plugged into a wall outlet, charging the battery as often as possible. Charging the batteries for brief intervals does not adversely affect battery performance. However, leaving the batteries fully discharged for long periods of time does adversely affect battery performance.*

7. Other Features

USB Port



USB Port/ J514: This USB 2.0 type B port connects the Power Supply Module to any cart-mounted computer (laptop or desktop). Use this with the TDI Power GUI software to display system operating information. See Graphical User Interface (GUI) section for more information.

Cooling Fan



Cooling Fan: The Power Supply Module features a quiet, efficient fan that regulates internal component temperatures so as to provide extended service life. The fan is thermostatically controlled and runs at either low or high speed depending on external ambient temperature and electrical load levels.

High Frequency Isolation Transformer

Ensures full UL/ CSA 60950 (Information Technology) as well as UL/CSA 60601-1 (Medical) compliance by managing ground current leakage of connected equipment.

Advanced, 4-Stage Battery Charger

Recharges batteries safer and faster than conventional chargers. Automatically identifies and selects the optimum charge profile for a given battery chemistry and capacity without user intervention. Faster charging ensures faster cart rotation between shifts.

DC Fuse (Internal/Not User Serviceable)

Protects BBU from damaging overload or external fault. Fuse is not user replaceable. Contact TDI or one of its authorized distributors for repair information.

8. Troubleshooting Guide

Problem	Possible Solution
<p>No AC output power available at outlets.</p>	<p>Turn Unit ON: Turn the Power Supply Module ON using the “ACC PWR OUTLET” Switch – See top cover of unit for location.</p> <p>Check Connections: Check to make sure the Power Supply Module and Battery Module are properly connected. Also, make sure the RUI is properly connected to the Power Supply Module. The Power Supply Module will not supply AC power without these connections. The user may need to turn on the Power Supply Module manually after reconnection.</p> <p>Apply AC Input Power: If a 100% battery discharge cycle and disconnect has occurred it may be necessary to re-apply input AC power to the battery charger for operation to resume. Once battery has recharged to proper level input AC power may be removed for mobile operation.</p>
<p>Battery Module not recharging, even with AC utility power present.</p>	<p>Check Connections: Check to make sure the Power Supply Module and Battery Module are properly connected. Also, make sure the Power Supply Module’s power cord is plugged into a live AC wall outlet.</p> <p>Check Ambient/ Operating Temperature: For safety reasons the BBU will automatically disconnect from the power system in the event of abnormal ambient or operating temperatures due to blocked cooling, ventilation or other reasons. Operation will automatically resume once abnormal condition is resolved.</p> <p>Replace Battery Module: The Battery Module will reliably supply backup power for several years with normal use. When the Battery Module reaches the end of its service life it will provide progressively diminishing capacity. Contact TDI Power or one of our authorized distributors for additional information.</p>
<p>Low Battery alarm sounding.</p>	<p>Check Battery Charge Level LED Meter: Silence the alarm, if desired, with the “Alarm Mute” button on the GUI panel. Check LED meter to determine the percentage of charge remaining. (See “Operation” section for charts illustrating Battery Charge LED Meter Display depending on different charge levels while discharging and charging.) When the charge level falls below 20%, the Battery Module is nearly depleted and Power Supply Module shutdown is imminent. If AC input power is not available for recharging the BBU the user should save any open files and safely shut down connected equipment immediately.</p>

9. Storage

For short term storage it is recommended to charge the Battery Module whenever possible (ie, between shifts). For long term storage and or shipping (> 2 weeks) the BBU should be disconnected from the electronics section, either by manually disconnecting the interface cables or via the "Battery Disconnect" function within the GUI. The fully charged BBU should then be stored in a cool, dry location and recharged at least once/month.



Even after the Power Supply Module is unplugged, its outlets may still deliver current, until it is disconnected from the Battery Module and completely turned OFF (deactivated).

Before storing the Power Supply Module, make sure the Battery Module is fully charged. Next, turn the Power Supply Module completely OFF by following these steps: (1) Unplug the Power Supply Module from the wall outlet. (2) Disconnect the Power Supply Module from the Battery Box Unit (BBU) - this can either be accomplished via the "Battery Disconnect" function on the GUI or by removing the Battery Power cable from connector P104.

If you store the Power Supply Module and Battery Module for an extended period of time, recharge the Battery Module one per month. Follow the connection and recharge procedure in the "Connections / Start-Up" section. If you leave the Battery Module discharged for an extended period of time, it will suffer a permanent loss of capacity.

10. Service

The TDI Power Medical-Grade Mobile Power System is covered by the warranty described later in this manual. Before returning your product for service, follow these steps:

1. Review the installation and operation procedures in this manual to insure the service problem does not originate from a misreading of the instructions.
2. If the problem continues, don not contact or return the product to the dealer. Instead visit www.tdipower.com/support.
3. If the problem requires service, visit www.tdipower.com/support and click the Product Returns link. From here you can request a Returned Material Authorization (RMA) number, which is required for service. This simple on-line form will ask for your unit's model and serial numbers, along with other general purchaser information. The RMA number, along with shipping instructions will be emailed to you. Any damages (direct, indirect, special or consequential) to the product incurred during shipment to TDI Power or an authorized TDI Power service center is not covered under warranty. Products shipped to TDI Power or an authorized TDI Power service center must have transportation charges prepaid. Mark the RMA number on the outside of the package. IF the product is within its warranty period, enclose a copy of your sales receipt. Return

the product for service using an insured carrier to the address giving to you when you request the RMA.

11. Safety and Regulatory Statements

It is the user's responsibility to verify and ensure that the TDI Power Medical-Grade Mobile Power System is appropriate for use within their specific application (meeting all safety and regulatory requirements for the application).

Regulatory Compliance Identification Numbers

For the purpose of regulatory compliance certifications and identification, this product has been assigned a unique series number. The series number can be found on the product nameplate label, along with all required approval markings and information. When requesting compliance information for this product, always refer to the series number. The series number should not be confused with the marking name or model number of the product.

UL CLASSIFICATION FOR MEDICAL EQUIPMENT: Class I, Type B, Ordinary Equipment, Continuous Operation.

UL/CAN/CSA 60601-1 APPROVAL (pending): The Power Supply Module incorporates a High Frequency isolation transformer that reduces cumulative leakage current of all connected equipment to below 300 microamperes.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment, when connected to additional external devices in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at their expense. The user must use shielded cables and connectors with this equipment. Any changes or modifications to this equipment not expressly approved by TDI Power could void the user's authority to operate this equipment.

12. Warranty and Warranty Registration

Limited Warranty

TDI Power warrants the Power Supply Module to be free from defects in materials and workmanship for a period of 2 years from the date of purchase by the end user. TDI Power warrants the Battery Module to be free from defects in materials and workmanship for a period of 6 months from the date of purchase by the end user. TDI Power's obligation under this warranty is limited to repairing or replacing (at its sole option) any such defective products. To obtain service under this warranty you must obtain a Returned Material Authorization (RMA) number from TDI Power or an authorized TDI Power service center. Products must be returned to TDI Power or an authorized TDI Power service center with transportation charges prepaid and must be accompanied by a brief description of the problem encountered and proof of date and place of purchase. This warranty does not apply to equipment which has been damaged by accident, negligence or misapplication or has been altered or modified in any way, including opening the unit's casing for any reason. This warranty applies only to the original purchaser who must have properly registered the product within 10 days of purchase.

EXCEPT AS PROVIDED HEREIN, TDI POWER MAKES NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. Some states do not permit limitation or exclusion of implied warranties; therefore, the aforesaid limitation(s) or exclusion(s) may not apply to the purchaser. EXCEPT AS PROVIDED ABOVE, IN NO EVENT WILL TDI POWER BE LIABLE FOR DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OF THIS PRODUCT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE. Specifically, TDI Power is not liable for any costs, such as lost profits or revenue, loss of equipment, loss of use of equipment, loss of software, loss of data, costs of substitutes, claims by third parties, or otherwise.

Warranty Registration

Visit <http://www.tdipower.com/warranty> today to register the warranty for your TDI Power product.

13. Battery Recycling Options

TDI Power recognizes the importance of recycling for our environment. In particular, batteries may contain toxins that can leach into the environment if disposed in landfills and therefore many local governments require proper disposal by law.

TDI supports the proper disposal of batteries from our uninterruptable power systems with the following recommendations.

- Local Collection points: a convenient way to dispose your dead batteries is to drop off the battery at local collection points that can be found at EARTH911.com.
- Contact TDI Power and ask a customer service representative for instructions to return the battery to the factory for eco-friendly disposal.
- Observe proper packing of batteries as recommended by Fedex or UPS at the below sites:

http://images.fedex.com/us/packaging/guides/BatteryShipments_fxcom.pdf

http://www.ups.com/media/news/en/pack_batteries.pdf

14. Specifications for the SPS4450-LF / SPS4450-1-LF

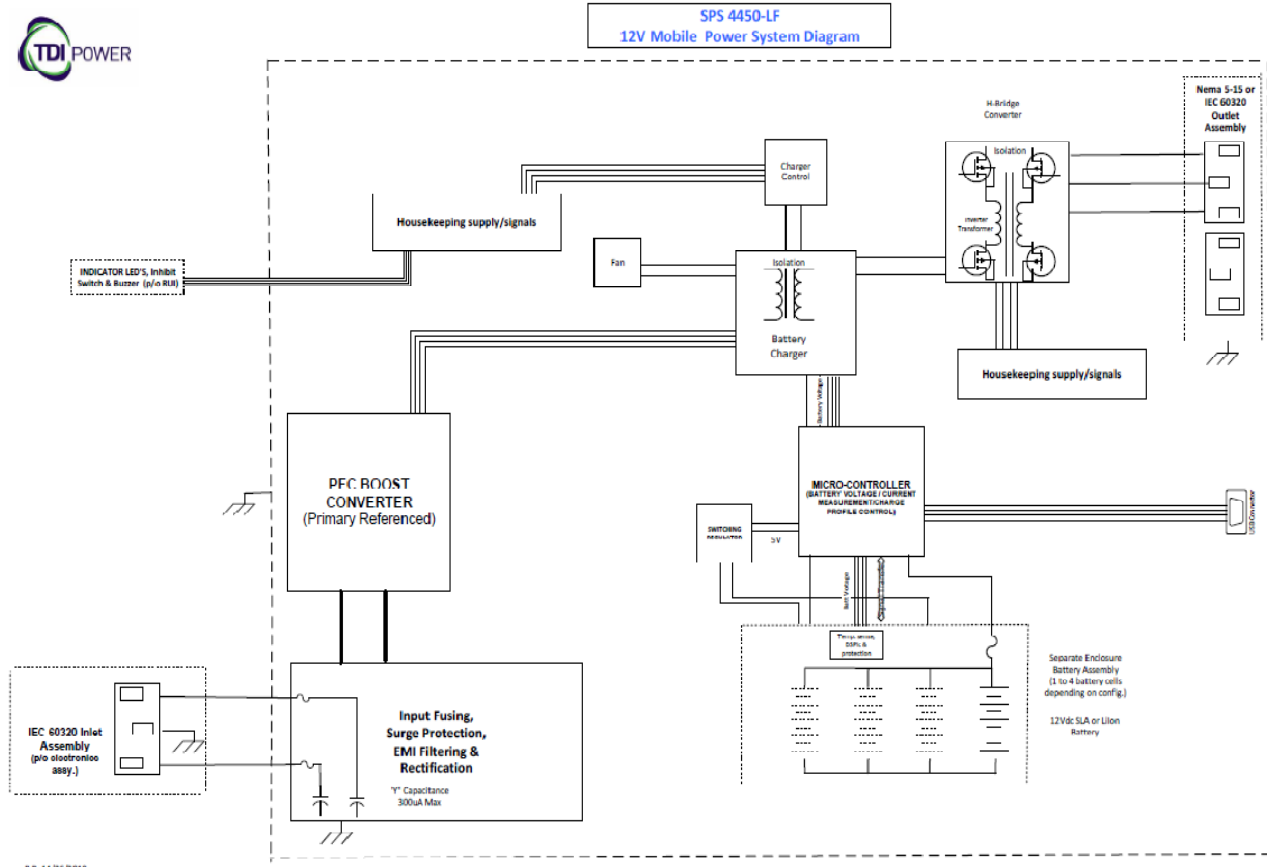
SPS4450-LF/ SPS4450-1-LF Series	
AC Input	
Input Voltage Range	90-264Vac
Input Frequency Range	47-63Hz
Input Current	4A max
Input Power	350VA typ.
Input Fusing	Internal recognized fusing protects AC mains
Input Surge Protection	An MOV across L&N protects internal circuitry

SPS4451, SPS4452 & SPS4453-LF Series BBU	
Input Voltage Range	13.2-14.7Vdc
Input / Output Frequency	DC
Input Current	18A max
Output Voltage	10.0- 13.6Vdc
Output Current	30.0A max
Output Fusing	Internal recognized fusing protects DC wiring

AC Output	
Output Voltage Range	120Vac +/- 3Vac
Output Frequency	57-63hz
Output Current	2.10A max
Output Power	250VA max
Output Protection	Over-current, Over-voltage, short circuit

Environmental	
Operating Temp Range	0-35 ° C
Storage Temp Range (exclusive of batteries)	-10 to 55 ° C
Leakage Current	Not to exceed 300uA at input up to 250Vac/60Hz
Humidity: Operating/Storage	0%-95% non-condensing (-10 to 35 ° C)

15. Power Module Block Diagram



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