



PROFESSIONAL SOUND CORPORATION

PSC POWER STAR LIFE™



Operation Manual Version 3.0

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28085 Smyth Drive, Valencia, CA 91355 USA

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Thank you for purchasing your new PSC Power Star LiFE re-chargeable power distribution system. This new power system combines an AC Power Supply, Charger, LiFE Rechargeable Battery, Power Distribution, Power Filtering, Monitoring and Protection Circuitry all in a single rack mount space. We believe this design is the new gold standard for compact field power systems.

PLEASE BE SURE THAT YOU HAVE READ AND UNDERSTOOD THIS ENTIRE OPERATIONAL MANUAL BEFORE OPERATING THE PSC POWER STAR LiFE!

CAUTION! THE CASE OF THE POWER STAR LiFE MAY GET HOT DURING USE. DO NOT ALLOW ANYTHING TO BLOCK THE COOLING HEAT SINK AND OTHER VENT OPENINGS. ALWAYS ALLOW AT LEAST A ONE RACK SPACE AIR GAP ABOVE THE COOLING HEAT SINK OPENINGS AND AROUND ALL VENT OPENINGS. ALL AUXILIARY EQUIPMENT SHOULD BE REVERSE POLARITY PROTECTED AND PROPERLY FUSED AT ALL TIMES.

THE POWER STAR LiFE IS DESIGNED FOR USE BY ITSELF OR WITH EITHER THE PSC PELICAN LiFE BATTERY OR WITH PSC PELICAN SEALED LEAD ACID BATTERIES AND IS FACTORY ADJUSTED FOR PROPER CHANGING OF THESE BATTERY TYPES ONLY! PLEASE CONSULT THE FACTORY FOR USE WITH OTHER BATTERY TYPES. YOUR POWER STAR LiFE MAY NEED INTERNAL ADJUSTMENTS TO BE COMPATIBLE WITH OTHER BATTERY TYPES.

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LiFE BATTERY SAFETY: This new product design is based on Lithium Iron Phosphate battery chemistry.....also known as “LiFE”. LiFE cells offer high capacity in a lightweight package similar to Lithium Polymer or Lithium Ion cells, but with one big improvement. LiFE chemistry is much more inherently safe as it does not suffer from temperature runaway conditions like older lithium chemistries do. The older lithium batteries were prone to fire if physically damaged or short circuited. These new LiFE batteries have proven to be a much safer alternative. While this battery chemistry is considered to be very safe, the TSA (Transportation Safety Authority) has not yet made the distinction between these LiFE lithium cells and the older less safe Lithium technologies. Please read and understand all transportation regulations before shipping these batteries on public airlines. You can get a full, detailed explanation of these regulations at the TSA website: http://safetravel.dot.gov/whats_new_batteries.html Additional information concerning “Larger Batteries” that applies to this product can be found here: http://safetravel.dot.gov/larger_batt.html Never ship your PSC Power Star LiFE if it has been physically or electrically damaged.

All AC powered devices should be treated with proper caution and respect. AC power on film sets and on locations may not always be properly grounded and/or distributed. PSC highly recommends that you purchase and use an AC power tester prior to plugging in your PSC Power Star LiFE or any other AC powered device while on location. You can purchase simple to use, inexpensive AC testers for less than \$20. They are a simple plug that has 3 or 4 lights on the rear of the plug. These lights indicate good AC, proper grounding, etc. They can also indicate dangerous AC conditions such as Hot and Neutral reversed or missing grounds. These AC testers can be purchased at most electronics stores. Here is an example of a typical AC Tester. PSC does not recommend any specific brand or take responsibility for its use or performance.



Typical AC Tester of the type you should use before plugging into AC on a film set or location.

FRONT PANEL:



The front panel of the PSC Power Star LiFE contains ten (10) DC power output connections on 4 pin female XLR's. A SpeakOn connector used to connect the unit to an external battery (PSC Pelican LiFE Battery or a PSC Pelican Lead Acid Battery). A 5 pin female XLR used to connect the Power Star LiFE Remote Control. An AC indicating BLUE LED. A Multi Colored LED "Fuel Gauge" to indicate battery charge level. Power "ON" and "OFF" push button switches (delayed action for "OFF" switch) and a LiFE battery protection circuit "RESET" switch.

REAR PANEL AC CONNECTION: On the rear panel of the Power Star LiFE you will find the AC power connection. This connection accepts a standard IEC power cord. You will also notice that just below the AC cord socket is a built fuse holder that holds the AC protection fuse. This unit uses a 250v, 15 Amp, slow blow, 5 x 20mm fuse. A spare fuse is included inside the fuse holder drawer. There are no other connections on the rear panel of the device.



AC input with fuse holder

RACK MOUNTING: Your new Power Star LiFE is designed to be rack mounted. It comes with a pair of heavy duty rack mount brackets. These brackets can be used from the front of the unit or the rear of the unit. Screws for installing these brackets are included. Please only use 6-32 x 0.375" screws with this Power Star LiFE. The use of longer screws may cause internal damage to the unit.

HEAT SINK: The PSC Power Star LiFE uses a large, custom made extruded aluminum heat sink to provide proper system cooling. This properly engineered cooling system uses convection cooling to pull heat away from the unit's power supply. The gold anodized heat sink provides

more than 375 square inches of heat dissipating surface. This heat sink should be kept clean and dust-free during use. The PSC Power Star LiFE does not use a fan for cooling. If the heat sink becomes covered with dust, it will not properly function and you may cause damage to your device. PSC recommends that you blow off the heat sink area with compressed air from time to time to keep the heat sink clean. You must leave open space above and to the sides of the PSC Power Star LiFE for proper cooling to take place. A minimum of 1 rack space (1.75") should be left open above the unit for cooling purposes. Likewise, this product should not be used in fully enclosed rack case or other enclosures that limit air flow. Failure to provide proper ventilation can and will damage the unit and will void your warranty.



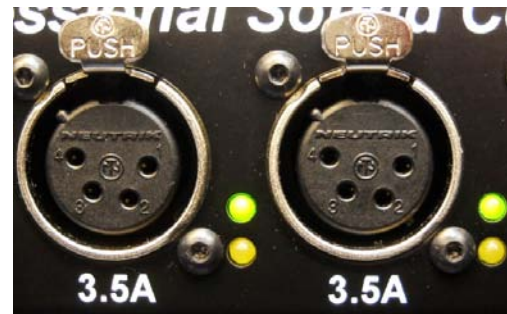
Close up view of the custom made, gold anodized, PSC aluminum heat sink extrusion

DC CONNECTIONS: There are ten (10) XLR female DC output connectors located on the front panel of the PSC Power Star LiFE. The first two (2) XLRs located to left hand side of the unit are rated for 8 Amps of output current. The remaining eight (8) output connectors are all rated for 3.5 Amps of output current. Each connector is individually Poly Fuse protected and monitored via the adjacent LEDs. If the connector is working properly, the GREEN LED will be lit. If the Poly Fuse has been tripped (short circuit in your cable or equipment) the GREEN LED will turn off and the YELLOW LED will turn on indicating a fault condition. Under normal conditions, you should never see any YELLOW LEDs. If you see a YELLOW LED, there is a problem and you should investigate the cable and device connected to that particular output connector immediately. If you ever have any questions about this, please do not hesitate to call PSC and

ask to speak with our service technician. We are always available to help you in any way needed.



Two (2) Output Connectors @ 8 Amps



Eight (8) Output Connectors @ 3.5 Amps

POWER SWITCHES: There are two round, momentary push button switches used to turn the unit on and off. The GREEN “ON” push button switch is used to turn the unit on. The RED “OFF” push button is used to turn the unit off. Please note that the RED “OFF” push button switch is equipped with a time delay circuit. You must press and hold this push button switch for 4-5 seconds before the unit will shut off. This time delay function serves to keep you from accidentally shutting down the PSC Power Star Life unexpectedly while working.



RED and GREEN Power On and OFF switches

FUEL GAUGE: The PSC Power Star LiFE is equipped with an easy to read and easy to understand multi-colored battery “Fuel Gauge”. Just a quick glance and you will immediately know the charge condition of your battery. A full row of Green LEDs indicated a fully charged battery. As the battery is discharged, the LEDs slowly go out. It is similar to reading the fuel gauge in your car. When the last (left most) RED LED goes out, the unit will shut down to protect the LiFE batteries from deep discharge. The unit must then be plugged into AC power

to re-charge the batteries and/or power up your equipment. Both functions can be done simultaneously.



Battery “Fuel Gauge” indicating a fully charged battery

AC INDICATOR: Whenever the unit is plugged into AC power, the BLUE “AC” LED will light indicating AC power is connected. Whenever the AC indicator is lit, the batteries will be charged (if needed). In addition, you can power your equipment anytime the unit is connected to AC power whether or not the battery is fully charged.



BLUE LED indicating AC power is connected

RESET BUTTON: Located just above the AC LED, is a small red push button switch located within a guard ring. This switch is used to manually “reset” the LiFE battery protection circuitry should the need ever arise. The Protection Circuitry protects the LiFE battery in four different ways: 1. It protects the battery from deep discharge conditions. 2. It protects the battery from over charge conditions. 3. It protects the battery from overly high discharge rates (short circuits). 4. It protects the battery from excessive charge currents. If you were to somehow short out multiple outputs of the PSC Power Star LiFE, the battery protection will disconnect the

batteries from the load. If this happens, there are two ways to reset the protection circuitry:

1. Plug in the PSC Power Star Life to AC power and the protection circuitry will automatically be reset.
2. If AC power is not available, you can simply momentarily press the “reset” button and the battery protection circuitry will be reset. The only time the manual reset switch will not reset the protection circuitry is if the battery has been deep discharged. In that case, you must connect AC power to minimally charge the battery before the automatic reset function will work. This manual reset button is a PSC exclusive feature.



“RESET” switch located above the AC LED

REMOTE CONTROL: The remote control box that is included with your PSC Power Star LiFE serves several functions. It can be used to remotely turn on and off the unit. This will allow you to mount the main Power Star LiFE housing in a convenient place on your sound cart. The remote control also has a battery charge level indicating “Fuel Gauge” that duplicates the meter on the main unit. Additionally, the remote control features four USB charging ports for your convenience. These four USB charging ports output 5Vdc up to a total of 4 Amps of output current. Lastly, the remote control box features a bright BLUE LED indicating AC power is connected to the Power Star LiFE.



Power Star LiFE Remote Control Box

SPEAKON CONNECTOR: The PSC Power Star LiFE is equipped with one 2 pole SpeakOn connector. This connector is used for the connection of an external battery. Using this connector, you can add a PSC Pelican LiFE Battery for extra battery capacity. The polarity of this connector is conventional SpeakOn. The center most contact is Positive (+) and the outer ring connection is Negative (-)



SpeakOn Connector used to external battery connection

CHARGING: Power Star LiFE contains a built in charger designed to charge the internal LiFE battery and also charge any external LiFE battery such as the PSC Pelican Life Battery. In addition, you can use the external battery connector with a standard PSC Pelican Lead Acid style battery. This allows you to connect an external battery to increase the battery capacity of the Power Star LiFE. The PSC Power Star LiFE will operate from a wide range of AC power so you can plug it in anywhere world without having to worry about making adjustments. The

charger circuit used in the Power Star Life has been specifically designed for charging the batteries while the batteries are in use powering low noise audio equipment. Unlike most battery chargers, ours have a very low noise floor. Typical recharge time ranges from 1 to 2 hours. The charging function is automatic and thus, it does not require your assistance in any way. Simply plug the PSC Power Star LiFE into an AC outlet and the charging begins (when needed). Beware that the Power Star LiFE may get warm during use. Be careful when touching the surface of the Power Star LiFE heat sink as this part may be HOT! Be sure to allow ventilation air gaps around the top panel and sides of the Power Star LiFE for proper heat dissipation. When using an additional external battery such as the PSC Pelican LiFE Battery, be sure to use a heavy-duty interconnect cable. This cable should be made with 12AWG wire and must use SpeakOn connectors. Please keep this and all battery cables as short as possible for best performance. We recommend a maximum external battery cable length of 3' (1M).

EQUIPMENT POWER CABLES: PSC recommends that you use only two conductor, unshielded 16AWG power cable for power distribution. Shielded cable is not recommended as the shield may cause short circuits between adjacent pins on the connectors. Please keep all cables as short as possible as this will minimize DC voltage drop across the cable.

WARNING: It is highly recommended that you have your cables built by qualified personnel and tested prior to use with your Power Star LiFE. All power cables should be clearly labeled on both ends as to what they are to be connected to. For example, label one end "Power Star LiFE" and the other end "Solice Mixer". This will help prevent inadvertently connecting the cables to the wrong piece of equipment. We cannot stress enough the importance of good quality power cables and careful connections. Poorly constructed and/or labeled cables can result in equipment damage!

POWER FILTERING: All PSC power products contain PSC Quiet Power Technology tm. This power filter technology allows the PSC Power Star LiFE to deliver clean, quiet DC power for all of your sound equipment powering needs. These filters include both audio and RF frequency filters to ensure trouble free DC power distribution in the field. Nearly all of today's audio equipment contain DC to DC convertors within their power supplies. These convertors can and will cause inter-modulation noise when connected to common DC power sources such as a battery. Here at PSC we firmly believe that proper DC filtering can and will eliminate most noise issues in the field. Our competitors do not understand inter-modulation noise and thus do not take the additional steps to prevent it like we do at PSC. Though not every piece of equipment will suffer from inter-modulation noise issues. Here at PSC believe that the extra parts cost and design time are worth it if it solves even one issue in the field. Why do we spend the extra \$50.00 to include these parts? Because we think you deserve the best quality DC power available.



PSC Quiet Power tm Filters partially shown behind output XLRs.

FUSING: Internally, the LiFE cells are protected against many typical faults via electronic monitoring and automatic fault protection. In addition, there is a 40 Amp Slow Blow automotive blade style fuse for ultimate safety. This fuse should never blow in normal use. If you ever experience a blown fuse, something is wrong with your setup. Please call PSC for technical assistance.

STORAGE: Please note that all rechargeable batteries slowly self discharge while in storage. If you store this battery, it must be fully recharged prior to storing it. It should also be charged every month while in storage. Failure to follow these instructions will cause damage to the battery and will not be covered under the PSC warranty.

TERMS OF USE:

THE IMPROPER CONNECTION OF THIS POWER SUPPLY TO AUXILIARY EQUIPMENT MAY RESULT IN DAMAGE TO SAID EQUIPMENT AND/OR PERSONAL INJURY. THIS PRODUCT IS DESIGNED TO BE OPERATED BY PROFESSIONALS IN THE FILM AND TELEVISION INDUSTRIES. THE PSC POWER STAR LIFE SHOULD ONLY BE OPERATED AFTER READING AND UNDERSTANDING THIS ENTIRE INSTRUCTION MANUAL. THE OPERATOR OF THIS POWER SUPPLY ASSUMES ALL RESPONSIBILITY AND LIABILITY FOR PROPER USE AND OPERATION OF THIS EQUIPMENT! PROFESSIONAL SOUND CORPORATION AND/OR ITS EMPLOYEES AND OFFICERS ASSUME NO RESPONSIBILITY OR LIABILITY FOR PERSONAL AND PROPERTY DAMAGE INCURRED DUE TO ACCIDENT, CARELESS HANDLING, ABUSE OR MISSUSE, IMPROPER CONNECTION, AND/OR INSTALLATION, IMPROPER ELECTRICAL CONTACT OR GROUNDING. OWNERSHIP AND/OR USE OF THE PSC POWER STAR LIFE CONSTITUTES AGREEMENT WITH THESE TERMS.

Limited Warranty Certificate

Professional Sound Corporation warrants the Power Star LiFE individual cells to be free of defective material and workmanship for a period of six months (LiFE Cells only). Furthermore, Professional Sound Corporation warrants the remaining electronics, housing and other parts to be free from defective material and workmanship for a period of one year from the original date of purchase and agrees to repair or replace such defective parts or the whole product at its option, provided that the equipment is returned to Professional Sound Corporation. Shipping and insurance costs to and from Professional Sound Corporation must be prepaid by the owner. This warranty does not cover damage due to accident, careless handling, abuse or misuse, improper connection and/or installation, improper electrical contact, charging or grounding. This warranty will be null and void in the event of removal, alteration or tampering with the serial number, or by service or repair work not performed by Professional Sound Corporation. Proof of purchase date (copy of invoice or Warranty Certificate) must be furnished before warranty service will be performed. This warranty is in lieu of any other warranty, expressed or implied, including warranties without limitation, products being merchantable at the time of purchase or suitable for a particular purpose. This warranty does not extend to, or include consequential damage.

SPECIFICATIONS:

SIZE: 17.50" wide, 13.00" deep, 1.75" high (44.5cm x 33cm x 3.8cm)

WEIGHT: 13.8Lbs (6.27Kg)

TEMPURATURE RANGE: Use: -4F to +124F (-20C to +50C)

AC INPUT: 100 – 240Vac, 47Hz -63Hz

OUTPUTS: 2 x 8Amp, 8 x 3.5Amp

OUTPUT VOLTAGE: 12.8Vdc Nominal

OUTPUT CURRENT: On LiFE Battery, 25 Amps. AC only, 24 Amps

CHARGING TIME: Typical Cart 1.5 hours, No Load (all equipment off) 1 hour

USB CHARGING PORT: 4 Ports, Total Output 5Vdc at 4 Amps

LiFE BATTERY CAPACITY: 12.8 Volts @ 20 Amp Hours (256 watts)

BATTERY CONNECTOR: SpeakOn 2 Pole (Mating connector Neutrik NL2FC)

Warranty: Electronics and Case, 1 year, Limited

Life cells, 6 Months, Limited

CE

DECLARATION OF CONFORMITY

EMC: This product is in compliance with the Electromagnetic Compatibility Directive, 89/336/EEC as defined in EN 50081-1, EN55022 and EN 50082-1. IEC801-2, IEC801-3 and IEC801-4.

LVD: This product is in compliance with the requirements of the Low Voltage Directive, 73/23/EEC. 93/68/EEC as defined in EN60065, 1993 and/or EN60950/A1/A2/A3: 1995

TRADE NAME: PSC

MODEL: Power Star LiFE Power Distribution System

RESPONSIBLE PARTY: Professional Sound Corp.
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Valencia, CA 91355 USA

CONTACT PERSON: Ronald Meyer
(661) 295-9395

TYPE OF PRODUCT: Rechargeable Battery, Power Distribution

MANUFACTURER: Professional Sound Corp.
28085 Smyth Drive
Valencia, CA 91355 USA

We hereby declare that the equipment bearing the trade name and model number listed above has been tested in accordance with the requirements contained in the above listed directives. All necessary steps have been taken and are in force to assure that production units manufactured will conform to Directive guidelines.

October 2012

Professional Sound Corporation.