PROFESSIONAL SOUND CORPORATION

PSC POWER STAR ELEMENT ™

Operation Manual Version 1.0

28085 Smyth Drive, Valencia, CA 91355 USA

CE RoHS Printed in the U.S.A.

Thank you for purchasing your new PSC PowerStar Element re-chargeable power distribution system. This new power system combines an External Battery Charger with a compact unit that includes: Power Distribution, Power Filtering, Monitoring and Protection Circuitry. We believe this design provides a great solution for use both at home and while traveling.

PLEASE BE SURE THAT YOU HAVE READ AND UNDERSTOOD THIS ENTIRE OPERATIONAL MANUAL BEFORE OPERATING THE PSC POWERSTAR ELEMENT!

CAUTION! DO NOT LIFT THE BATTERY WEIGHT BY LIFTING ON THE POWESTAR ELEMENT. DO NOT DROP THE BATTERY/POWERSTAR ELEMENT COMBINATION. PLEASE HANDLE THIS BATTERY/POWERSTAR ELEMENT COMBINATION WITH CARE AT ALL TIMES. DO NOT SHORT CIRCUIT ANY BATTERY TERMINALS AS ELECTRICAL SHOCK AND OR EQUIPMENT DAMAGE MAY RESULT. ALWAYS TREAT RECHARGEABLE BATTERIES WITH GREAT CAUTION. ALL AUXILARY EQUIPMENT SHOULD BE REVERSE POLARITY PROTECTED AND PROPERLY FUSED AT ALL TIMES.

THE POWER STAR ELEMENT IS DESIGNED FOR USE WITH EITHER A SEALED LEAD ACID CHEMISTRY BATTERY OR WITH A LiFEPO4 (LITHIUM IRON PHOSHATE) BATTERIES ONLY. THE SUPPLIED CHARGER IS DESIGNED TO CHARGE THESE TWO TYPES OF BATTERIES ONLY! THE INCLUDED BATTERY CHARGER IS FACTORY ADJUSTED FOR PROPER CHARGING OF THESE BATTERY TYPES ONLY!

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BATTERY SAFETY: All high capacity batteries should be handled with great care. They can contain a large amount of stored energy that can be dangerous if the battery terminals are short circuited. Great care must be taken while handling these types of batteries to not cause a short circuit.

This new product design allows you to use either a sealed lead acid (SLA) type of battery or a LiFEPO4 (lithium Iron Phosphate) type battery. This allows the user to decide which type of battery they choose to use while working near their home and also while traveling. Traveling with high capacity LiFEPO4 batteries requires special "Hazardous Shipment" regulations when shipping these types of batteries via air shipment (UPS, Federal Express, DHL. Various Air Lines, etc.). This hazardous shipping requires special paperwork, special packing boxes and overall added costs. For this reason, we have designed this product so that the battery is external to the device. Because of this, you can ship this device to a foreign country and simply buy an inexpensive SLA battery to use with the device when you arrive at your location shoot. This eliminates having to deal with shipping any lithium batteries.

Never ship your PSC PowerStar Element while it is attached to any battery! It must be removed (un-installed) from the battery before shipping the unit.

AC POWER SAFETY:

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 Element charger 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 and hardware 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 PowerStar Element contains seven (7) DC power output connections on 4 pin female XLRs. A SpeakOn connector is used to connect the unit to the supplied external battery charger. A Multi Colored LED "Fuel Gauge" to indicate battery charge level. A Power "ON" and "OFF" toggle switch (delayed action for "OFF" switch) and a Blue "CHARGING" LED is included. Also included are four (4) USB power output connectors that have 4 Amps of total current available.

SIDE PANEL BATTERY CONNECTION THUMB SCREWS:

This device was designed to be used with commonly found 12 volt, 33 to 35 Amp Hour Sealed Lead Acid (SLA) batteries. This size and style of battery was chosen as it is the most common size available world-wide. This style and size battery is used in almost all electric wheel chairs, human mobility devices (sometimes called "rascals") riding lawn mowers and many other uses. These physical size batteries are also starting to become commonly available as LiFEPO4 (lithium Iron Phosphate) chemistry. This will allow you to use the more modern, much lighter weight LiFEPO4 battery while working near your home and then switch to a Sealed Lead Acid (SLA) battery while traveling outside of the country.

BATTERY RECOMMENDATIONS AVAILABLE ON AMAZON AS OF DATE OF MANUAL PUBLICATION:

SEALED LEAD ACID (SLA):

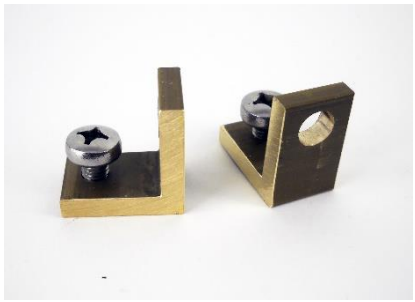
Power Sonic #PS-12350814	**Post Terminal Style**
Universal Power Group #D5722 UB12350	**Post Terminal Style**
Mighty Max Battery #ML35-12 SLA	**Post Terminal Style**
Interstate Battery #SLA1155	**Post Terminal Style**

MOUNTING THE POWERSTAR ELEMENT TO THE BATTERY:

IT IS EXTREMELY IMPORTANT THAT YOU READ AND THOROUGHLY UNDERSTAND THESE ENTIRE MOUNTING INSTRUCTIONS BEFORE YOU MOUNT THE UNIT TO ANY BATTERY!

PLEASE NOTE THAT BATTERIES SOLD IN NORTH AMERICA TYPICALLY HAVE FLAT TERMINALS THAT STICK UP OUT FROM THE BATTERY. BATTERIES SOLD IN MANY PARTS OF EUROPE AND ASIA HAVE 6MM SCREW TERMINALS. EVERY POWERSTAR ELEMENT COMES WITH A PAIR OF BRASS TERMINAL ADAPTERS. IF YOU HAVE A BATTERY WITH 6MM SCREW STYLE TERMINALS, YOU SIMPLY INSTALL THE SUPPLIED BRASS TERMINAL ADAPTERS BEFORE INSTALLING THE POWERSTAR ELEMENT ONTO THE BATTERY.

North American Terminal



Brass Terminal Adapters

6MM Style Terminal

1. **MAKE SURE YOU HAVE A CORRECTLY SIZED BATTERY:**
   This device is designed to mount directly to the battery terminals of typical 33-35Ah Sealed lead Acid (SLA) batteries and their equivalent LiFEPO4 batteries. It is specifically designed to mount to batteries with terminals that have a 6.250”

(15.785cm) spacing and batteries that have the Positive (+) terminal located on the left top side of the battery and Negative (-) terminal located on the right top side of the battery. Mounting this device to batteries with other terminal spacing is not permitted under any circumstance as it is not designed to be used that way.

2. Make sure the battery you have has the standard terminal polarity. With the battery located so that the terminals are facing toward you, the positive terminal must be located to the left side of the battery and the negative terminal must be located to the right side of the battery. Double check the battery polarity matches the polarity sticker on the PSC unit before proceeding.
3. If using 6mm TERMINAL STYLE BATTERIES, you must install the supplied 6mm Brass adaptors to the battery before proceeding. Please note that the part that screws down onto the 6mm battery terminal is slotted to allow overall terminal width adjustment. Please install the brass terminal adaptors so that the vertical brass battery post is facing toward the front of the battery and so the center line distance between the post holes measures approximately 6.250" (15.9cm)
4. Remove the two thumb screws from the unit by gently turning them counter-clockwise until they are free from the unit.

Thumb Screws removed from unit.

5. Carefully note the orientation of the PSC PowerStar Element in relationship to the battery terminals. There is a colored sticker on the front edge of the PSC PowerStar Element to help you locate the unit correctly over the terminals. The Positive (RED +) terminal on the battery must connect to the Positive terminal on the PowerStar Element. The Negative (BLACK -) terminal on the battery must connect to the Negative terminal on the PowerStar Element.

6. Once you have determined that you have the unit positioned correctly, you may carefully drop the unit down over the battery terminals. Please note that the unit should easily drop down over the terminals without using ANY PRESSURE or FORCE at all! If you find that it does not easily drop onto the terminals, STOP what you are doing and re-check the orientation, battery size and type and correct spacing of the Brass 6mm Terminal Adaptors if they are used. DO NOT FORCE THE UNIT ONTO THE BATTERY AS DAMAGE TO THE UNIT AND/OR BATTERY MAY RESULT. If you have ANY questions, stop what you are doing and call PSC for help.

7. GENTLY insert the two thumb screws into the holes on the front side of the PowerStar Element and start threading them in a CLOCKWISE direction (Righty Tighty).

8. Make sure the threads start correctly before continuing to tighten the thumb screws. Once you are sure that you have correctly started the threads, the screws should easily thread inward until the RED and BLACK Thumb Screw Caps seat flush to the front edge of the Power Star Element. You may now fully tighten the thumb screws. The thumb screws should be fully tightened down with adequate thumb pressure to insure good electrical contact between the battery contact and the battery terminal. These should be tightened down fairly tight using your thumb and finger. Tightening using tools is NOT needed or recommended.

Thumb screws installed and finger tightened.

BATTERY CHARGER HEAT DISSIPATION: The PSC Power Star Element uses an external 10-amp battery charger. This charger will get quite warm in use. You must provide adequate airflow around the charger so that is can properly dissipate the heat given off while charging. Do not operate the charger with the charger fully enclosed such as in a drawer, or packed tightly within other equipment. It must have some free space around every side of the body of the charger in order that it dissipate heat correctly. Failure to provide proper ventilation can and will damage the unit and will void your warranty. To charge the unit, simply connect the chargers inline SpeakOn connector to the matching SpeakOn chassis connector on the PowerStar Element and then plug the charger into AC power.

Charger plugged into PowerStar Element showing Blue LED “Charger” indicator.

DC CONNECTIONS: There are seven (7) XLR female DC output connectors located on the front panel of the PSC Power Star Element. The first six (6) XLRs located to left hand side of the unit are rated for 3 Amps of output current. The remaining XLR output connector is rated for 5 Amps of output current. Each connector is individually Poly Fuse protected.

Top panel with XLR Power Outputs, USB Power Outputs, SpeakOn Charger Connection, Power Switch and Battery "Fuel Gauge"

POWER SWITCH: The main power switch is centrally mounted. It is a "Momentary" type of toggle switch. You press and hold it momentarily upward to turn the unit "ON". You momentarily hold it downward to turn the unit "OFF". Please note that the "OFF" direction of the switch is equipped with a time delay circuit. You must press downward and hold this position 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 Element unexpectedly while working.

Power "ON" and "OFF" Switch. Note, to turn off unit you must hold switch in the "OFF" position for 4-5 seconds

BATTERY LEVEL "FUEL GAUGE": The PSC PowerStar Element 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 automatically shut down to protect the battery from deep discharge. The unit must then be connected to the supplied PSC battery charge to re-charge the battery and/or power up your equipment. Both functions can be done simultaneously.

Battery "Fuel Gauge" indicating a fully charged battery

"CHARGER" INDICATOR: Whenever the unit is connected to the supplied battery charger and the battery charger is plugged into AC power, the BLUE "CHARGER" LED will light up indicating that the charger is connected and properly powered up.

BLUE LED indicating battery charger is connected

CHARGER CONNECTOR: The PSC Power Star Element is equipped with one 2 pole SpeakOn connector. This connector is used for the connection of the supplied external battery charger. Using this connector, you charge the battery that is connected (mounted) to the PSC PowerStar Element. The polarity of this connector is conventional SpeakOn. The centermost contact is Positive (+) and the outer ring connection is Negative (-)

SpeakOn "Charger" Connector used for battery charger connection.

CHARGING: The PowerStar Element comes with a supplied battery charger. This charger will operate world-wide without adjustment as it operates from 100 to 240VAC at either 50Hz or 60Hz. This charger was carefully chosen to charge either Sealed Lead Acid (SLA) batteries or LiFEPO4 (Lithium Iron Phosphate) batteries. Typical recharge time ranges from 1 to 3 hours. The charging function is automatic and thus does not require your assistance in any way. Simply plug the supplied battery charger into the PSC PowerStar Element and the charging begins (when needed). Be aware that the PowerStar Element Battery Charger may get warm during use. Be sure to allow ventilation air gaps around the supplied battery charger for proper heat dissipation.

OPTIONAL REMOTE BATTERY CABLE:

We offer an optional cable that allows the Power Star Element to be remotely connected to a battery. It is our part number **FPSECABLE.** This cable has machined brass "battery terminals" on one end and ring terminals on the other end. The cable is normally supplied in a 3' length (0.92 meter) and is constructed from super heavy duty 8AWG wire. This cable will allow you to mount the Power Star Element in a separate location from your battery and it will allow the unit to be connected to batteries that do not have standard terminal spacing. The cable comes complete with a set 6mm screws for use on metric "post less" batteries and also 1/4" bolt and nut for use on standard terminal batteries.

OPTIONAL REMOTE BATTERY CABLE

Cable before attachment

Cable attached to Power Star Element

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 PowerStar Element. All power cables should be clearly labeled on both ends as to what they are to be connected to. For example, label one end "PowerStar Element" and the other end "XXX Mixer or Recorder". 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 various forms of what we call "PSC Quiet Power Technology" tm. Simply put, this power filter technology allows the PSC PowerStar Element 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 we 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 money and time to include these parts? Because we think you deserve the best quality DC power available.

FUSING: Internally, the battery connection is protected against faults and short circuits using a 40A automotive blade type fuse. It has been placed there as a "Fail Safe" in case anything was to ever go drastically wrong. This fuse should never blow in normal use. If you ever experience a blown internal 40A fuse, something is wrong with your setup. Please call PSC for technical assistance.

BATTERY STORAGE: Please note that all rechargeable batteries slowly self discharge while in storage. If you store any rechargeable battery, it should be fully recharged prior to storing it. All Sealed Lead Acid (SLA) batteries should be charged every month while in storage. All LiFEPO4 (Lithium Iron Phosphate) batteries should be charged every three (3) months during 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 ANY BATTERY OR AUXILIARY EQUIPMENT MAY RESULT IN DAMAGE TO SAID EQUIPMENT, BATTERY AND/OR CAUSE PERSONAL INJURY. THIS PRODUCT IS DESIGNED TO BE OPERATED BY PROFESSIONALS IN THE FILM AND TELEVISION INDUSTRIES. **THE PSC POWERSTAR ELEMENT 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 BATTERY AND/OR EQUIPMNET CONNECTION AND/OR BATTERY CHARGER CONNECTION, AND/OR INSTALLATION, IMPROPER ELECTRICAL CONTACT AND/OR IMPROPER GROUNDING. OWNERSHIP AND/OR USE OF THE PSC POWER STAR LiFE CONSTITUTES AGREEMENT WITH THESE TERMS.

Limited Warranty Certificate

Professional Sound Corporation warrants the PowerStar Element 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 battery and/or charger connection and/or cable 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:

SPECIFICATIONS, MAIN UNIT:

SIZE:	**8.00” W, 4.00” D, 1.50” H (20.3cm x 10.2cm x 3.8cm)**
WEIGHT:	**1.3Lbs (590g)**
TEMPERATURE RANGE:	**-4F to +124F (-20C to +50C)**
XLR OUTPUTS:	**6 x 3Amp, 1 x 5Amp**
USB POWER OUTPUTS:	**4 Ports, Total Output 5Vdc at 4 Amps**
OUTPUT VOLTAGE:	**12.8Vdc Nominal**
OUTPUT CURRENT:	**On Battery, 15 Amps Maximum, 10 Amps Continuous**
CHARGING TIME:	**No Load (all equipment off) 1-3 hours**
LiFEPO4 BATTERY CAPACITY:	**12.8 Volts @ 50 Amp Hours or less**
CHARGER CONNECTOR:	**SpeakOn 2 Pole (Mating connector Neutrik NL2FC)**

SPECIFICATIONS, BATTERY CHARGER:

SIZE:	**7.00” W, 3.00” D, 1.50” H (17.8cm x 7.6cm x 3.8cm)**
WEIGHT:	**1.6Lbs (730g)**
TEMPERATURE RANGE:	**-4F to +124F (-20C to +50C)**
AC POWER:	**100-240VAC, 50 /60Hz**
DC OUTPUT:	**13.6V Nominal, 10A Maximum**
Output connector:	**SpeakOn, 2 Pole**

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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:	**PowerStar Element Power Distribution System**
RESPONSIBLE PARTY:	**Professional Sound Corp.** **28085 Smyth Drive** **Valencia, CA 91355 USA**
CONTACT PERSON:	**Ronald Meyer** **(661) 295-9395**
TYPE OF PRODUCT:	**Power Distribution/Charger**
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 2020 **Professional Sound Corporation.**