



# PRO Charging Systems

Installation and Operating Instructions  
(for chargers shown below)



For additional information please call our  
*Technical Support Group 800.742.2740*



072308

PRO CHARGING SYSTEMS, LLC  
1551 Heil Quaker Boulevard, LaVergne, TN 37086-3539

INSTALLATION AND OPERATING INSTRUCTIONS FOR THE FOLLOWING  
BATTERY CHARGING SYSTEMS:

Model	Description	Total Output	Battery System
Lil Pro 1	One 4 Amp Bank	4 Amps	12V
Lil Pro 2	Two 4 Amp Banks	8 Amps	12V, 24V
Lil Pro 3	Three 4 Amp Banks	12 Amps	12V, 24V or 36V

**IMPORTANT NOTICE**

Please save and read all safety, operating and installation instructions before installing or applying AC power to your on-board battery charging system.

Please contact technical support at Pro Charging Systems, LLC (PCS) with any product, installation or service questions (800.742.2740).

**Introduction**

Pro Charging Systems, LLC (PCS) has been manufacturing waterproof, on-board battery charging systems since 1989. Our systems are designed and built tough to withstand intense vibration, extreme temperature variations, and, if needed, be submerged without damaging the unit. Our systems use temperature compensation in order to fully charge a battery in hot or cold environments and are controlled by microprocessors in order to assure precise control over each totally independent charging bank. All of our chargers have true reverse polarity protection and shut off completely after each charge cycle.

**Table of Contents**

Safety Instructions . . . . . Pages 2-4  
 Product Summary . . . . . Pages 4-5  
 Installation Instructions . . . . . Pages 5-6  
 Troubleshooting Instructions . . . . . Pages 6-7  
 Warranty Information . . . . . Page 7

**IMPORTANT SAFETY INSTRUCTIONS**

SAVE THESE INSTRUCTIONS. This manual contains important safety and operating instructions for battery charger models: **Lil Pro 1, Lil Pro 2, Lil Pro 3.**

Use of attachments not recommended or sold by PCS may result in a risk of fire, electrical shock, or injury to persons.

Do not operate charger if it has received a sharp blow, been dropped, or been otherwise damaged in any way; contact PCS technical support (800.742.2740).

Do not disassemble charger; contact technical support when service or repair is required (800.742.2740). Incorrect reassembly may result in risk of electrical shock or fire.

To reduce risk of electrical shock, unplug charger from outlet before attempting any maintenance or cleaning.

#### **WARNING: RISK OF EXPLOSIVE GASES**

**WORKING IN THE VICINITY OF A LEAD-ACID BATTERY IS DANGEROUS.** Batteries generate explosive gases during normal battery operation. For this reason, it is of utmost importance that, prior to each use of your charger, you read this manual and follow the instructions exactly.

To reduce risk of battery explosion, follow these instructions, those published by the battery manufacturer, and those by the manufacturer of any equipment you intend to use in the vicinity of the battery. Review cautionary markings on these products and on engine.

#### **PERSONAL PRECAUTIONS**

Someone should be within range of your voice or close enough to come to your aid when you work near a lead-acid battery.

Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, eyes, or other surfaces.

Wear complete eye protection and clothing protection. Avoid touching eyes while working near battery.

If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 10 minutes and seek medical attention promptly.

NEVER smoke or allow a spark or flame in the vicinity of the battery or engine.

Be extra cautious to reduce risk of dropping a metal tool onto the battery. It might cause a spark or short-circuit the battery or another electrical part, possibly resulting in an explosion.

Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery. A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.

Use charger for charging a LEAD-ACID (lead acid, sealed lead acid, gel cell and AGM) battery only. It is not intended to supply power to a low voltage electrical system other than in a starter-motor application. Do not use battery charger for charging dry-cell

batteries that are commonly used with home appliances. These batteries may burst, causing personal injury and damage to property.

NEVER charge a frozen battery.

## **PREPARING TO CHARGE**

If necessary to remove the battery or batteries from boat to charge, always remove grounded terminal from battery first. Make sure all accessories in the boat are off, so as not to cause battery arcing.

Be sure the area around the battery is well ventilated while batteries are being charged. On occasion, “gas fumes” may be present during charging and can be forcefully blown away by using a piece of cardboard or other nonmetallic material as a fan.

Clean all of the battery terminals. Be careful to keep corrosion from coming into contact with eyes.

Add distilled water in each cell (wet cell batteries) until battery acid reaches level specified by battery manufacturer. This helps purge excessive gas from cells. Do not overfill. For a battery without cell caps, carefully follow manufacturer’s recharging instructions.

Study all battery manufacturers’ specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.

Extension cords should be industrial grade/heavy duty UL (United Laboratories, Inc.) approved and grounded. Check extension cord before use for damage, bent prongs and cuts. Replace if damaged.

Always make your extension cord connection on the charger side first. After connecting the extension cord to the charger, proceed to plug the extension cord into a nearby 120VAC GFCI protected (Ground Fault Circuit Interrupt) outlet.

Always remove the extension cord from the 120VAC outlet first when charging is completed, followed by unplugging the charger.

## **PRODUCT SUMMARY**

### **General Operation**

Use the following guidelines in this manual to install your fully automatic PCS battery charging system.

Assure that your charger and batteries are properly ventilated. Connect your extension cord with no AC power present to the battery charger and proceed to plug your extension cord in at a nearby 120VAC outlet.

Once you plug in your PCS battery charging system, your batteries will be simultaneously and independently charged to 100%. Unlike systems that utilize one large charger to attempt to charge multiple batteries, your system uses a totally independent battery charger for each battery. Each charging bank will turn itself completely off once the battery is charged and then monitor and maintain the battery indefinitely.

We recommend that you leave your system plugged in to reduce sulfation on the lead plates of the batteries and to allow your PCS charging system to keep your batteries fully maintained and ready to perform at their best.

### **Independent Charging Bank Indications**

When your battery charging system is activated, each bank provides charging information utilizing one red Light Emitting Diode (LED) indicator and one green Light Emitting Diode (LED) indicator.

The red LED will illuminate and remain on during the charging process.

When the charge cycle is complete, the red LED will extinguish and the green LED will illuminate. At this point, the battery is being maintained at full charge by the charger circuitry.

### **INSTALLATION INSTRUCTIONS**

All PCS battery charging systems are designed to be permanently installed in a well ventilated area and have no mounting restrictions.

Do not make any electrical connections to the power supply (AC) or to a battery (DC) until the installation process has been completed.

If mounting the charger in a boat, choose a flat surface as high above the water level as possible. If a compartment wall is chosen, make certain its strength is adequate to support the weight of the charger.

Use the mounting flanges of the charger to mark locations for starter holes. Drill a 1/16 inch hole at each marked location. Then utilize all stainless steel screws that have been provided and install the charger securely, being cautious not to over tighten the screws. Silicon sealer should be used to secure and waterproof the screw holes.

Before making any connections, prepare batteries as follows:

- (a) With caps securely in place, thoroughly clean the case and posts with a solution of baking soda and water. Be careful not to allow any baking soda to get inside the case.
- (b) All posts, terminals and connectors should be cleaned to a shiny, bright finish, using a wire brush or sand paper. This should be done periodically to assure maximum conductivity between the battery and the charger.

Attempts to lengthen or shorten the cables could partially disable the charger. Therefore, we recommend that you do not make any adjustments without first consulting technical support (800.742.2740).

Route your cables from the charger to your batteries, being cautious to avoid sharp objects, and use the supplied wire ties to hold them neatly in place.

Securely connect the red charger ring terminals to the positive battery posts and the black charger ring terminals to the negative posts.

If the unit is equipped with a standard AC plug on the power cord, a plug receptacle is also provided to hold the power cord plug when it is not being used. Locate a convenient site for the receptacle and attach it using the four smaller stainless steel screws.

Connect a heavy duty UL approved extension cord to the power cord of your charger and then plug the extension cord into a nearby 120VAC GFI protected (Ground Fault Circuit) outlet.

You should now observe red LED indications on each bank of the charger representing each individual battery being charged. The voltage of each battery will reflect the number of LED indicators illuminated. (See product summary.)

When charging is complete, remove the extension cord from the 120VAC outlet first and then unplug the charger.

## **TROUBLESHOOTING**

**PROBLEM:** No LED indicators illuminate in any of the charger banks.

Solution Sequence:

Check the AC power supply from its source through all connecting points up to the charger by using a meter or test light to confirm that current is being delivered to the charger.

**PROBLEM:** Red LED flashing.

## Solution Sequence

With the AC power supply cord unplugged, check the ring terminals for correct polarity (Red to positive or + and Black to negative or -). Also check for corrosion free secure connections to the batteries. Call technical support for further assistance (800.742.2740).

**PROBLEM:** A green LED was illuminated before disconnecting the power from the charger, but upon reconnection, the red LED appears and remains on.

This is normal operating procedure for the system and simply indicates that a re-analysis of the battery status has been initiated. After a series of steps, the green LED will illuminate.

### **LIMITED WARRANTY**

Pro Charging Systems, LLC (PCS) makes this Limited Warranty only to the original retail purchaser.

PCS warrants this battery charger for three years from the date of retail purchase against defective materials and/or workmanship. If such defects should occur, this unit will either be repaired or replaced at the discretion of the manufacturer. It is the responsibility of the original purchaser to return the charger along with proof of purchase, transportation, and/or any mailing or handling charges prepaid to the manufacturer or its authorized representative.

This limited warranty is void if the product is misused, improperly maintained, handled carelessly or incorrectly operated. Additionally, this warranty is void if the charger is disassembled, the charger's charge cables are cut, the power cord is cut off, the charger is altered without authorization from PCS, the serial number is removed, or repair is attempted by anyone other than an authorized representative.

PCS makes no other warranty other than this limited warranty and expressly excludes any implied warranty, including warranty for any incidental or consequential damages.

This is the only expressed limited three year warranty authorized by PCS and does not authorize anyone to assume or make any other obligation towards the product other than this three year Limited Warranty. Some states do not allow limitation of incidental or consequential damages.

This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Please call Pro Charging Systems, LLC (800.742.2740) for full warranty information and/or service.

Please call Pro Charging Systems, LLC (PCS) at 1.800.742.2740 for full warranty information and/or service.