PRO Charging Systems

Safety, Installation and Operating Instructions

Instructions importantes concernant la sécurité

072318-70251

IMPORTANT NOTICE:
Please save and read these safety, operating and installation instructions before installing or applying AC power to your Pro Charging Systems (PCS) charger. Contact technical support at PCS with any product, installation, or service questions (615.471.5300).

Pro Charging Systems, LLC
LaVergne, TN 37086-3539

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IMPORTANT SAFETY INSTRUCTIONS

INSTRUCTIONS IMPORTANTES CONCERNANT LA SÉCURITÉ

SAVE THESE INSTRUCTIONS. This manual contains important safety and operating instructions for future reference.
CONCERVER CES INSTRUCTIONS. CE MANUEL CONTIENT DES INSTRUCTIONS IMPORTANTES CONCERNANT LA SÉCURITÉ ET LE FONCTIONNEMENT.

Understand and relate the Hazard Levels and Signal Words utilized in this manual with the following definitions:

DANGER This symbol means: Immediate hazards, which will result in severe personal injury or death.

WARNING This symbol means: Hazards or unsafe practices, which could result in severe personal injury or death.

CAUTION This symbol means: Hazards or unsafe practices, which may result in minor personal injury, product or property damage.

This symbol means BE ALERT! Your safety, or the safety of others, is involved!

PERSONAL SAFETY PRECAUTIONS

Always read all instructions before using your charger!

1. **Wear complete eye protection and clothing protection.** Avoid touching eyes while working near battery. Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, eyes, or other surfaces. 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.
2. **Dress properly**. Wear protective, electrically nonconductive clothes and nonskid footwear. 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. Wear restrictive hair covering to contain long hair.
3. **Avoid working alone.** Be sure someone is within range of your voice or close enough to come to your aid when you work near a lead-acid battery.

4. **Stay alert.** Watch what you are doing, and use common sense. Do not operate any charger when you are tired.
5. **Keep children away.** Children must never be allowed in the work area. Do not let them handle machines, tools, battery chargers, or extension cords.
6. **Keep work area clean.** Cluttered areas invite injuries.
7. **Observe work area conditions.** NEVER smoke or allow a spark or flame in the vicinity of battery or engine. Don't expose to rain. Keep work area well lit.
8. **Do not overreach.** Keep proper footing and balance at all times. Do not reach over or across electrical cables or frames.
9. **Avoid electrical shock.** To reduce risk of electrical shock, unplug charger from outlet before attempting any maintenance or cleaning.
10. **Do not operate charger with damaged electrical cord or plug.** To reduce risk of damage to the electrical plug and cord, pull by plug rather than by the cord when disconnecting charger. If damaged, replace the electrical cord or plug immediately.
11. **Store idle equipment.** When not in use, store equipment in a dry location to inhibit rust. Always lock up tools and equipment and keep out of reach of children.
12. **Maintain charger with care.** Inspect periodically and, if it has received a sharp blow, been dropped, or otherwise damaged in any way, have it repaired by an authorized technician. Do not disassemble charger; contact PCS technical support when service or repair is required (615.471.5300). Incorrect reassembly may result in risk of electrical shock or fire.
13. **Check for damaged parts.** Before using any battery charger, carefully check any part that appears damaged to determine that it will operate properly and perform its intended function. Check for broken parts and any other condition that may affect proper operation. Any part that is damaged should be properly repaired or replaced by a qualified technician. Do not use the charger if any part does not operate properly.
14. **Replacement parts and accessories.** When maintaining, only use accessories intended for use with this charger. Approved accessories are available from Pro Charging Systems (615.471.5300).
15. **CAUTION:** To reduce the risk of fire, use only on circuits provided with 15 amperes branch circuit protection at 115 VAC in accordance with the national electrical code, ANSI/NFPA 70

ATTENTION: Pour réduire le risque d'incendie, utilisez uniquement sur les circuits munis d'une protection de circuit 15 ampères de branche à 115 VAC en conformité avec le Code canadien de l'électricité CEC Partie 1

SAVE THESE INSTRUCTIONS!

INSTALLATION AND PREPARATION

To reduce risk of battery explosion, follow these instructions, those published by the battery manufacturer, and by the manufacturer of any equipment that you intend to use in the vicinity of battery. Review all cautionary markings on these products and on the engine. *Pour réduire le risque d'explosion, lire ces instructions et celles qui figurent sur la batterie.*

If it is necessary to relocate the battery for charging, first remove the grounded terminal from the battery. Then make sure all accessories are off, so as not to cause battery arcing.

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. *Il est dangereux de travailler a proximité d'une batterie au plomb. Les batteries produisent des gaz explosifs en service normal. Il est aussi important de toujours relire les instructions avant d'utiliser le chargeur et de les suivre à la lettre.*

WARNING **Do not operate charger in a closed-in area or restrict ventilation in any way.**
Ne pas faire fonctionner le chargeur dans un espace close et/ou ne pas gener la ventilation.

Clean battery terminals. Be careful to keep corrosion from coming into contact with eyes.
Add distilled water to each cell 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.

When using an extension cord, make sure:

- that pins on plug of extension cord are the same number, size, and shape as those of the charger's plug; • that extension cord meets UL (Underwriters Laboratories, Inc.) acceptance;
- that wire size is large enough for AC ampere rating of charger.

CAUTION **Always make your extension cord connection on the charger side before connecting to a nearby 120VAC GFCI protected (Ground Fault Circuit Interrupt) outlet. Failure to use a GFCI outlet may result in electrical shock.**

Note: Extension cords should be industrial grade/heavy duty UL approved and grounded. Check extension cord before use for damage, bent prongs and cuts. Replace if damaged.
Connect the extension cord to the charger; then proceed to plug the extension cord to the GFCI protected (Ground Fault Circuit Interrupt) outlet.
Always remove the extension cord from the GFCI protected outlet first when charging is completed, followed by unplugging the charger.

GENERAL OPERATION

WARNING **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.**

Utiliser le chargeur pour charger une batterie au plomb uniquement. Ce chargeur n'est pas concu pour alimenter un réseau électrique très basse tension ni pour charger des piles sèches. Le fait d'utiliser le charger des piles sèchespourait entrainer l'éclatement des piles et causer des blessures ou des dommages.

WARNING **Be extra cautious to reduce risk of dropping a metal tool onto battery. It might cause a spark or short-circuit a battery or other electrical part, possibly resulting in an explosion. If damaged, contact PCS (**615.471.5300**).**

CAUTION

NEVER charge a frozen battery.
Ne jamais charger une batterie gelée.

Assure that the area around your charger and batteries is properly ventilated. Connect your extension cord, with no AC Power present, to the battery charger and proceed to plug your extension cord into a 120VAC GFCI protected (Ground Fault Circuit Interrupt) outlet.

DANGER **Risk of electrical shock! Do not touch uninsulated parts of the battery charger output connector, battery connector, or battery terminals.**

Once you plug in your PCS battery charging system, the charge cycle will begin automatically. State of charge will be displayed by illumination of the Light Emitting Diodes (LEDS) on the battery status indicator located on the front of the unit.

WARNING **DO NOT connect or disconnect the DC output electrical cord to or from the battery receptacle when the charger is on. Arcing and / or burning of the plug and receptacle could result and could cause the batteries to explode. If the charger must be stopped, first disconnect the AC power supply cord from its outlet, then disconnect the charger DC output plug from the battery receptacle.**

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

CAUTION **To reduce the risk of fire, use only on circuits provided with 15Amperes Branch Circuit Protection in accordance with the National Electrical Code, ANSI/NFPA 70.**

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

Prendre connaissance des measures de précaution spécifiés par le fabricant de la batterie, p. ex., vérifier s'il faut enlever les bouchons des cellules lors du chargement de la batterie, et les taux de chargement recommandés.

CAUTION **Never place the charger directly above or below the battery being charged; gases or fluids from the battery will corrode and damage the charger. Locate the charger as far away from the battery as DC cables permit.**

Ne jamais placer le chargeur directment sous la batterie à charger ou audessus de cette dernière. Les gaz ou les fluids qui sèchappent de la batterie peuvent entrainer la corrosion du chargeur ou l'endommager. Placer le chargeur aussi loin de la batterie qui les cables c.c. le permettent.

CAUTION **If it is necessary to remove battery from vehicle to charge it, always remove grounded terminal from battery first. Make sure all accessories in the vehicle are off in order to prevent an arc.**

S'il est nécessaire de retirer la batterie du véhicule pour la charger, toujours d'ébrancher la borne de mise à la masse en premier. S'assurer que le courant aux accessories du véhicule est coupe afin d'éviter la formation d'un arc.

CAUTION **Never smoke or allow an open spark or flame in the vicinity of the BATTERY, the battery charger, or engine.**

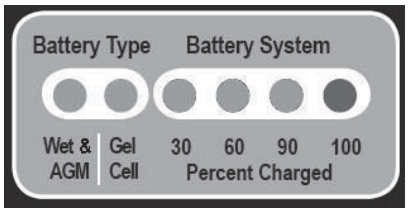
Ne jamais fumer près de la batterie ou du moteur et éviter toute étincelle ou flamme nue à proximité de ces dernie.

CAUTION **Working in the vicinity of a lead-acid battery is dangerous. Batteries generate explosive gases during normal operation. For this reason it is of the utmost importance that prior to each use of your charger, you read and follow the instructions provided exactly.**

Il est dangereux de travailler a proximité d'une batterie au plomb. Les batteries produisent des gaz explosifs en service normal. Il est aussi important de toujours relire les instructions avant d'utiliser le chargeur et de les suivre à la lettre.

CHARGING INDICATIONS

When your battery charging system is activated, the battery status indicator provides charging information utilizing three red LED indicators, two amber LED indicators, and one green LED indicator.



Battery Type Indicators
Two amber LED indicators are provided in order to display what type of battery the charger has been programmed to charge. **NOTE:** For information on reconfiguring the battery type, please contact technical support (615.471.5300).

Battery System Percent Charged Indicators
Four LED indicators are provided in order to display the progress of the charge cycle in percentage of charge. Indications are as follows:

1ST Amber LED . . . . . Illuminated configured for Wet Cell and **AGM*** batteries
2ND Amber LED . . . . . Illuminated configured for Gel Cell batteries
1ST RED LED . . . . . Charging - Initial Charging Up To 30%
2ND & 3RD RED LEDS . . . . . Charging - 60% Complete
1ST, 2ND & 3RD RED LEDS. . . . . Charging - 90% Complete
BLINKING GREEN LED . . . . . Finishing Stage (Note: Battery Type Indicator will also blink during this stage)
STEADY GREEN LED . . . . . Charge Complete –Float/Maintenance Mode-On for 5 minutes and off for 60 minutes

***We normally recommend our STANDARD Delta Volt profile for AGM Batteries. There are some cases where particular AGM batteries are manufactured to different specifications and may need a special profile with a much lower finish voltage limitation. In these cases we will do our best to accommodate your unique need.**

The green LED is illuminated whenever the charge cycle has terminated and the internal circuitry has determined the batteries to be fully charged. The green LED will blink during the finishing stage of the charge cycle. After the completion of the charge cycle, the green LED will remain on steady during the float-maintenance stage. ***During this final stage current is only flowing to the battery system for 5 minutes and then current will stop completely for 60 minutes.***

Your system provides an equalization stage every 30 days while plugged in. If the charger is normally disconnected from A/C after completing charge, equalization can be accomplished by plugging back into A/C whenever this stage is desired. Battery manufacturers recommend that equalization is done once a month in order to further reduce sulfation on the lead plates of a battery, which helps promote longer battery life. Note: During this process the LEDs will go through their normal routine(Red LEDs counting up for % of charge along with the illuminated Amber LED Battery Type) and then the Green LED and Amber Battery Type LED will blink) until the unit returns to the maintenance mode and a steady Green LED and steady Amber Battery Type LED. (Not applicable to Gel Profile)

TROUBLESHOOTING

PROBLEM: No LED indicators illuminated on battery status indicator.

Solution Sequence:
1. Confirm that current is being delivered to the charger. Use a meter or test light to check the AC power supply from its source through all connecting points up to the charger.
2. Check that the AC circuit breaker (on front of the unit) is depressed.
3. Call technical support for further assistance (615.471.5300).

PROBLEM: The charge status indicator changes rapidly back and forth from red to green or the green LED will not illuminate after excessive charging time (24 hours or more).

Solution Sequence:
1. Disconnect AC power from the charging system. This indication may signify a possible battery problem.
2. Call technical support for further assistance (615.471.5300).

PROBLEM: A green LED was illuminated before disconnecting the power from the charger, but upon reconnection, red LEDs appear and remain on.

This is the normal operating procedure for the system. It indicates that a reanalysis of the battery status was initiated and after a series of steps the green LED will illuminate.

LIGHT EMITTING DIODES (LED) FAULT CODE INDICATIONS

The microprocessor is constantly monitoring the charger circuitry and will both detect and display blinking LED indications if a fault is detected. The battery type LED will be ***OFF*** during a fault code condition.

When first connected to DC (AC not connected), the LEDs will display one or more of the following:

1. **The LEDs will flash the charger's ID code (this is for PCS internal use only). Once the LEDs flash the ID, they will only display one yellow LED. This configuration will remain until AC is detected and a charge cycle is in progress.**
2. **There is also a possibility the LEDs will not flash their ID code and only show a yellow LED.**
3. **Lastly, the LEDs may not flash their ID code and may not show any LEDs until AC is detected.**

If the AC line and neutral wires are reversed, the unit will wait 2 minutes before starting a charge. NOTE: The 2 minute wait period will also be a factor if the charger is being powered by anything other than normal grid AC such as a conventional generator, inverter, etc.

If AC is disconnected while charging, the unit will turn off as expected. The user may hear some clicking noise, but should not be alarmed. This is the Powered by Battery/DOE functionality checking for AC connection.

30 & 60% RED LEDS BLINKING ……..…..…FORMING STAGE TIMEOUT SHUTDOWN
This indication occurs if the battery voltage has not risen above 1.75 volts per cell within the first 3 hours of charging. This indicates that a possible battery problem exists and that the charge cycle has been terminated at this point.

30, 60 & 90% RED LEDS BLINKING.....OVERALL TIMER SHUTDOWN
This indication occurs if the charger has not completed the charge cycle within the allowable factory set time period. This indicates that a possible battery problem exists and that the charge cycle has been terminated at this point.

30 & 90% RED LEDS BLINKING …..….....INTERNAL OVERTEMP SHUTDOWN
This indication occurs if the charger circuitry has detected operating temperatures inside the charger enclosure that are above factory specified levels. This could indicate that a possible charger problem exists and that the charge cycle has been terminated.

30% RED & 100% GREEN LEDS BLINKING …..…..... BULK STAGE SHUTDOWN
This indication occurs if the battery voltage does not rise properly during the Bulk Stage. This indicates that a possible battery problem exists and that the charge cycle has been terminated at this point. Please call technical support for further assistance (615.471.5300).

30% RED & 100% GREEN LEDS ALTERNATE BLINKING ON OFF…..….....DELTAVIEW SIGNAL OR NO BATTERY DETECTED
This will be the NORMAL indication when the charger is plugged into A/C but not connected to a battery pack, allowing the DeltaView signal to be retrieved with a DeltaView Reader. This can also be considered the NO BATTERY DETECTED fault code. Please call technical support for further assistance (615.471.5300).
Note: Disconnecting and reconnecting the AC power supply cord will reset the charger.

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 (unless the charger is used in a Restricted Market) from the date of retail purchase against defective materials and/or workmanship. Restricted markets include markets outside of the USA, Rental applications and Heavy Industrial applications. Sometimes RM is designated in the PCS Part number when ordered, but is not part of the model number. Chargers used in Restricted Markets will have a warranty period of 18 months from the date of retail purchase against defective materials and/or workmanship. CR refers to "Certified Reconditioned" and designates a 1 year warranty.

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. Chargers that are purchased more than two years beyond the date of production will automatically have a warranty start date that will be the two year anniversary of the production date.

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 for full warranty information and/or service please call (615.471.5300).

FCC Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

CAUTION: The grantee is not responsible for any changes or modifications not expressly approved by the party responsible for compliance. Such modifications could void the user's authority to operate the equipment.

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 in a residential installation. This equipment generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

– Reorient or relocate the receiving antenna.

– Increase the separation between the equipment and receiver.

– Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

– Consult the dealer or an experienced radio/TV technician for help.

This equipment has been tested and meets applicable limits for radio frequency (RF) exposure. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

RF Exposure Statement

This equipment complies with the FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20cm between the radiator and any part of your body.