

DUAL PRO

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Safety, Installation And Operating Instructions For The Following Battery Charger Models: i2412, i3612, i4809, i2425, i3625, and i4818

IMPORTANT NOTICE:

Please save and read these safety, operating and installation instructions before installing or applying AC power to your Charging Systems International charger. Contact Charging Systems International with any product, installation, or service questions at 1-800-742-2740.

INTRODUCTION

Charging Systems International has been manufacturing quality battery charging systems since 1989. Our products are designed and built tough to withstand intense vibration and extreme temperature variations. Temperature compensation is utilized to fully charge a battery in hot or cold environments and all of our systems are controlled by microprocessors in order to assure precise operation. All of our chargers have true reverse polarity protection and shut off completely after each charge cycle.

INSTRUCTIONS FOR THE FOLLOWING BATTERY CHARGER MODELS:

For lead-acid batteries with capacities of 70 to 260 ampere-hours (20 AH rating):

MODEL	AC Supply	DC Output	Battery System
i-2412	120 volts, 60 Hertz	12 amps @ 24 volts	24 volt, 12 cell, series connected
i-3612	120 volts, 60 Hertz	12 amps @ 36 volts	36 volt, 18 cell, series connected
i-4809	120 volts, 60 Hertz	9 amps @ 48 volts	48 volt, 24 cell, series connected

For lead-acid batteries with capacities of 180 to 260 ampere-hours (20 AH rating):

MODEL	AC Supply	DC Output	Battery System
i-2425	120 volts, 60 Hertz	25 amps @ 24 volts	24 volt, 12 cell, series connected
i-3625	120 volts, 60 Hertz	25 amps @ 36 volts	36 volt, 18 cell, series connected
i-4818	120 volts, 60 Hertz	18 amps @ 48 volts	48 volt, 24 cell, series connected

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IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS — This manual contains important safety and operating instructions for future reference.

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



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



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



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 or eyes. 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 get medical attention immediately.
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, 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 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 electric plug and cord, pull by plug rather than 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 repaired by an authorized technician. Do not disassemble charger; contact the factory when service or repair is required. Incorrect reassembly may result in risk of electrical shock or fire.
13. **Check for damaged parts.** Before using any battery charger, any part that appears damaged should be carefully checked to determine that it will operate properly and perform its intended function. Check for any 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 Charging Systems International (800-742-2740).

SAVE THESE INSTRUCTIONS!

INSTALLATION AND PREPARATION



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

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 an arc.



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 each time, before using your charger, you read this manual and follow the instructions exactly.

Be sure area around battery is well ventilated while batteries are being charged. Gas fumes can be forcefully blown away by using a piece of cardboard or other nonmetallic material, such as a fan.

Clean battery terminals. Be careful to keep corrosion from coming in 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 manufacturer's 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 plug and charger;
- extension cord is properly wired and in good electrical condition;
- wire size is large enough for AC ampere rating of charger.



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 electric shock.

Note: Extension cords should be industrial grade/heavy duty U.L. 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 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.

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 and cause injury to persons and damage to property.



WARNING

DO NOT attempt to attach a charger to a battery pack if the output of the charger does not match the battery pack voltage. Example: Model i-3612 is a 36 volt output charger and is only usable on 36 volt battery systems. Charger and battery damage can occur.



WARNING

Be extra cautious to reduce risk of dropping a metal tool onto battery. It might spark or short-circuit battery or other electrical part that may cause an explosion. If damaged contact Charging Systems International.



CAUTION

NEVER charge a frozen battery.

Assure that your charger and batteries are properly vented. 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 GFCI protected (Ground Fault Circuit Interrupt) outlet.



DANGER

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

Once you plug in your Charging Systems International battery charging system, the charge cycle will begin automatically. State of charge will be displayed by illumination of the LED's on the battery status indicator located on the front of the unit.



WARNING

DO NOT disconnect the DC output electrical cord from the battery receptacle when the charger is on. The resulting arcing and burning of the plug and receptacle 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 to reduce sulfate build-up and to allow your Charging Systems International charging system to keep your batteries fully maintained and ready to perform at their best.

Charging Indications

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

Normal indications:

Red LED indicators — Five red LED indicators are provided in order to display the progress of the charge cycle in percentage of charge. Indications are as follows:

- 1 red BLINKING LEDNo Battery Detected - Not Charging
- 1 red LEDCharging - Initial Charging Up To 10%
- 2 red LED'sCharging - 30% Complete
- 3 red LED'sCharging - 50% Complete
- 4 red LED'sCharging - 70% Complete
- 5 red LED'sCharging - 90% Complete

Green LED indicators— one green LED indicator is provided in order to display the status of the battery once the charge cycle is terminated. Indications are as follows:

- BLINKING GREEN LED . . .Charge Complete - Within Last 12 Hours
- STEADY GREEN LED . . .Charge Complete - Monitoring Batteries

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 first 12 hours following charge cycle completion. After the 12 hour period, the green LED will remain on steady and the internal circuitry will monitor battery voltage. If the battery voltage drops to a factory determined setting, the green LED will turn off and the charger will automatically return to charge status.

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 the factory for further assistance.*

PROBLEM: One red LED flashing.

Solution Sequence:

1. *Check the battery for correct polarity.* With the AC power supply cord unplugged, check the battery connection for correct polarity (Red to positive or +) and (Black to negative or -). Also check for corrosion free secure connections to the batteries.
2. *Call the factory for further assistance.*

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 the factory for further assistance.*

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 re-analysis of the battery status was initiated and after a series of steps the green LED will illuminate.

LIMITED WARRANTY

Charging Systems International makes this Limited Warranty only to the original retail purchaser.

Charging Systems International warrants this battery charger for three years from the date of retail purchase against defective materials and/or workmanship. If such 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. This warranty is also void if the charger is disassembled or repair is attempted by anyone other than an authorized representative.

Charging Systems International makes no other warranty other than this limited warranty and expressly excludes any implied warranty including any warranty for any incidental or consequential damages.

This is the only expressed limited three year warranty authorized by Charging Systems International and does not assume nor 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, so the above limitations may not apply to you.

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

Please call Charging Systems International at 1-800-742-2740 for full warranty information.