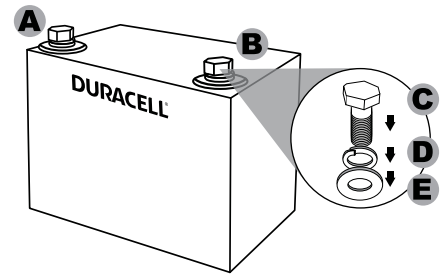


DURACELL® 100 Ah 12.8 Volt Lithium Iron Phosphate (LFP) Battery User Guide

Product Details



- A. Positive (+) Battery Terminal
- B. Negative (-) Battery Terminal
- C. 12mm M8 Bolt (1 each per terminal)
- D. 1.4mm Locking Washer (1 each per terminal)
- E. 4mm Flat Washer (1 each per terminal)

IMPORTANT NOTE
In the text of this manual, you may find references to the chemistry of this battery using the initials "LFP". Please note that all instances of "LFP" are referring to your Lithium Iron Phosphate battery.

Safety Information

- ⚠ This section contains important safety information. Before using the product, READ ALL instructions and cautionary markings on or provided with the product, and all appropriate sections of this guide. The product contains no user-serviceable parts. **SAVE THESE INSTRUCTIONS.**
- ⚠ CAUTION: Risk of Fire and Burns. Do Not Open, Crush, Heat Above 55°C / 131°F or Incinerate. Follow Manufacturer's Instructions

IMPORTANT SAFETY INSTRUCTIONS

WARNING – When using this product, basic precautions should always be followed, including the following:

- a) Read all instructions and cautions carefully before installing or using to avoid personal injury or damage.
- b) When unboxing the battery, first check it carefully to make sure that there is no damage to the battery.
- c) If you notice any defects please contact Customer Service at (800) 300-1857 immediately.
- d) Charging and discharging the battery generates heat and requires proper air flow. Use in a ventilated area and ensure adequate clearance around the battery.

CAUTIONS

- a) Do not immerse the battery in water.
- b) Keep the battery in a cool dry place when storing. Storage temperature = -5°C (23°F) — 45°C (113°F)
- c) If seasonally stored in a space which will fall below -5°C (23°F), it is recommended to discharge the battery down to 60 — 80% charge (do not fully discharge the battery) and disconnect the battery from any external system.
- d) Do not use or leave the battery at a high temperature or near fire or heat. Otherwise, it can overheat, and battery performance will degrade, and its service life will be shortened.
- e) Do not reverse the positive and negative terminal connections.
- f) Do not short circuit the battery terminals. It may cause serious damage to the battery.
- g) Do not transport or store the battery together with metal objects.
- h) Do not drop, hit or shock the battery.
- i) Do not pierce the battery case with a nail or other sharp objects.
- j) Do not use the battery in a location where static electricity and/or magnetic fields are present. Otherwise, the internal safety protections may prevent the battery from functioning.
- k) Do not connect the battery in series or in parallel with any other type or size of battery.
- l) Do not overload the battery.
- m) For the most efficient charging, use a charger designed for LFP batteries.
- n) Recharge the battery within 12 hours after use.
- o) If the battery is punctured and the electrolyte gets into your eyes, do not rub your eyes. Instead, rinse the eyes with clean water, and immediately seek medical attention.
- p) If the battery gives off a strange odor, generates heat, becomes discolored or deformed, or in any way appears abnormal during use, recharging or storage, immediately stop charging and/or using the battery and remove it from the connected charger or vehicle.
- q) In case the battery terminals are dirty or oxidized, clean the terminals with a dry cloth before use. Otherwise, poor performance may occur due to inadequate contact with the terminals.
- r) Tape battery terminals to insulate them before disposing.

INSTALLATION PRECAUTIONS

- a) Do not connect battery terminals around flammable materials or liquids during installation.
- b) The battery should be installed in a well-ventilated area, and not in direct sunlight.
- c) When fastening battery terminals, do not use excessive force, or the terminals could be damaged.
- d) Clean the surface of battery with a dry cloth. Don't use oil or solvents to clean; it may damage the battery.
- e) Please make sure that the positive (+) & negative (-) polarities are correctly connected.

SAVE THESE INSTRUCTIONS

⚠ **IMPORTANT NOTE:** This battery must NOT be installed into a vehicle as an engine starting battery.

Battery Usage and Maintenance

- Charging current should be less than maximum charge current listed (see **Product Specifications** on **Page 4** for details). The battery will stop charging if the current is higher than the limit.
- Discharging current should be less than maximum discharge current listed (see **Product Specifications** on **Page 4** for details). The battery will stop delivering power if the current is higher than the limit.
- The battery should be charged or discharged within the charge and discharge temperature range listed (see **Product Specifications** on **Page 4** for details).
- The battery should be stored with the storage temperature range (see **Product Specifications** on **Page 4** for details) listed to ensure longer cycle life.
- Store the battery with a partial or full charge to ensure longer cycle life.
- The battery can be over-discharged if left in storage for extended periods in a fully depleted state. In order to prevent over-discharging, the battery should be periodically charged at least once per year, even if it has not been in use.
- After the battery is discharged, recharge the battery as soon as possible.
- Do not use any solvents to clean the battery case.
- In the unlikely event of a battery fire, use a dry powder fire extinguisher or sand to extinguish. **DO NOT USE WATER TO ATTEMPT TO PUT OUT A BATTERY FIRE.**

Getting Started

1 Fully Charge the Battery Before Installing

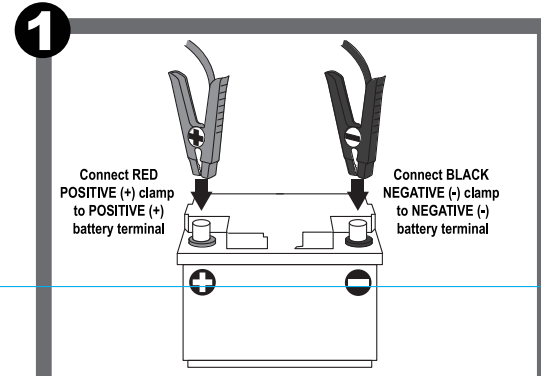
Your battery must be fully charged before installing or storing it. The battery arrives only partially charged to comply with transportation regulations. Keep all packing materials in case you need to ship the battery, as they have been specially designed for the safe transport of this type of battery.

- TOOLS NEEDED:**
- AC outlet and AC Battery Charger - sold separately (see "Types Of AC Chargers" below).
 - OR**
 - Solar Panel and MPPT Charge Controller - sold separately. (Please consult your solar battery charger's user manual for approximate charge times and allow sufficient time for your battery to receive a full charge before installation into your vehicle or other application.)

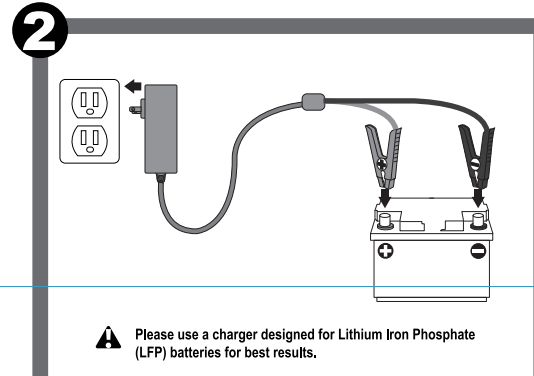
⚠ **IMPORTANT SAFETY NOTE:** Please be sure to connect the RED POSITIVE (+) battery charger clamp to the RED POSITIVE (+) terminal on your battery, and the BLACK NEGATIVE (-) charger clamp to the BLACK NEGATIVE (-) battery terminal. Reversing these connections (known as "reverse polarity") may result in failed charging and/or damage to your battery.

⚠ **CAUTION:** Fully charge your battery before using or storing it. The battery arrives only partially charged to comply with transportation regulations. Keep packaging in case you need to ship the battery, as it is designed for the safe transportation of this type of battery.

Charging your battery from an AC charger:



1 Connect your charger's RED (+) clamp to the bolt on the RED (+) battery terminal and the BLACK (-) clamp to the bolt on the BLACK (-) battery terminal.



2 Plug your AC battery charger* into an AC outlet.
Note: See "Types Of AC Chargers" at right. Typical connection shown. Your own configuration may vary according to the model of your charger.

Types of Battery Chargers*

A: Lithium (LFP) charger (recommended)
Pros: Faster optimized charging at up to 50A
Cons: Will need to be purchased specifically for your battery

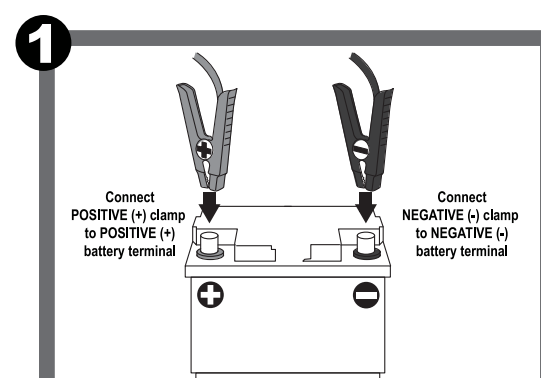
B: Lead Acid (SLA/AGM) charger
CAUTION: The SLA charger must meet the following conditions:
1) **Must NOT have a De-Sulfating feature**
2) **Maximum charge voltage of 14.7V**
3) **Float voltage of 13.8V**

Pros: This is the typical battery charger you may have on hand. You can use your existing charger installation as long as it meets the "CAUTION" conditions above.
Cons: (1) Slower charging; typical SLA chargers are 2-20A but your LFP battery can charge at up to 50A, (2) If your LFP battery is in protection mode due to over discharge or high temperature, the SLA charger will not detect or charge the battery.

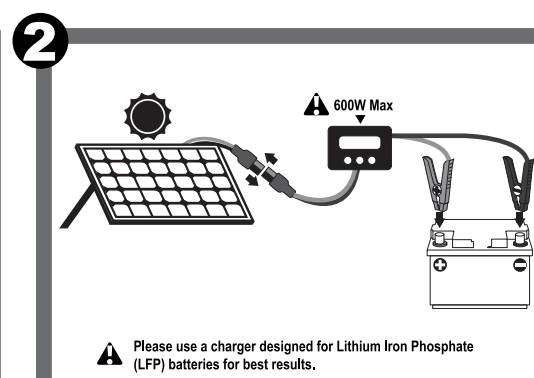
* Battery chargers sold separately

⚠ **IMPORTANT NOTE - TEMPERATURE RANGE**
The battery will prevent charging and discharging at extreme temperatures in order to protect the cells from permanent damage. (See **Product Specifications** on **Page 4** for details and temperature limits)

Charging your battery from a solar panel:



1 Connect your solar charge controller's RED (+) clamp to the bolt on the RED (+) battery terminal and the BLACK (-) clamp to the bolt on the BLACK (-) battery terminal.



2 Plug your solar charge controller** to your solar panel**.
Note: Typical connection shown. Your own configuration may vary according to the model(s) of your solar panel and solar charge controller.

IMPORTANT NOTE

This battery is compatible with solar panels rated 600 Watts and below. Please be sure to use an MPPT solar charge controller when connecting solar panels to the battery.

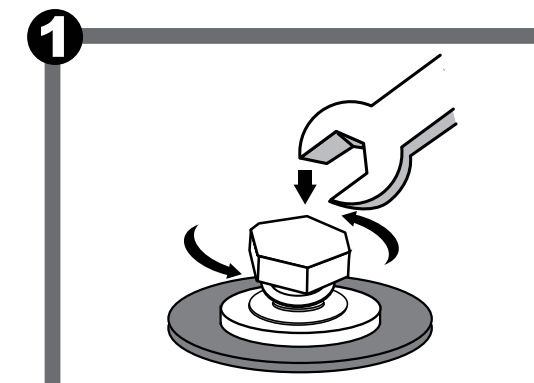
** Solar panel and solar charge controller sold separately.

Getting Started (cont'd)

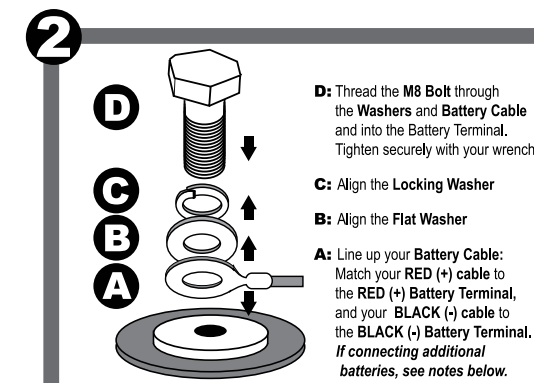
2 Connecting Your Battery Cable

Please follow the steps below to properly connect your battery cable to the battery terminals.

- TOOLS NEEDED:**
- 13mm or adjustable wrench (not included) is recommended to remove the M8 Bolt from the Battery Terminal and replace/properly torque the bolt after installing your battery cable.
 - A torque meter. The proper torque specification for the bolt-and-washer assembly shown below is 12 NM / 8.5 foot-pounds.



1 Loosen the M8 Bolt, remove the Locking Washer and Flat Washer from the Battery Terminal. Set those pieces aside.



2 Align the eyelet of your Battery Cable with the hole in the Battery Terminal, then reinstall the Locking Washer and Flat Washer in the order shown above. (See **Battery Cable Wire Gauge Guide** on next page)

IMPORTANT NOTES

- Please be sure to reinstall the bolt and washers in the exact order shown at left for a safe and secure connection.
- It is critical to ensure that your cables are properly connected in strict accordance with the guidance in this manual. Improper connection may cause a "reverse polarity" fault and damage the battery and void your warranty
- If your battery is not detected by your charger, please replace the battery as it is damaged or end of life.
- If your battery temperature is 65°C or above, it will enter protection mode and will not charge. Please allow the battery to cool down before trying to charge again.

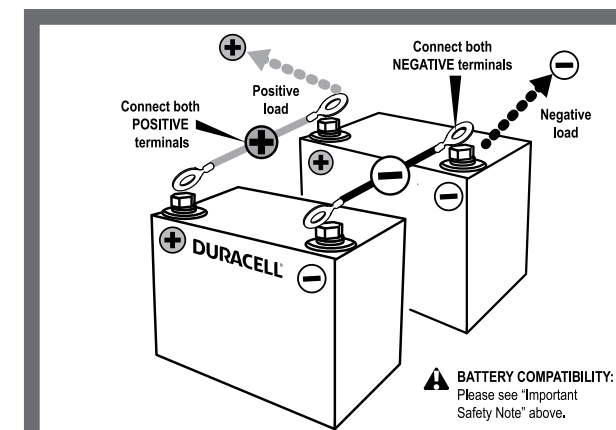
3 Connecting Additional Batteries

Refer to the diagrams below to connect your battery to additional batteries for added run time. For best results, please be sure that all batteries are fully charged before connecting together. You may connect up to a maximum total of 4 batteries using the connection methods shown below.

- TOOLS NEEDED:**
- Set of double-ended battery cables (sold separately) for each set of connected batteries
 - 13mm or adjustable wrench (not included) to securely connect the cables to the terminals of each battery. (For additional details, please see "Connecting Your Battery Cable" above.)

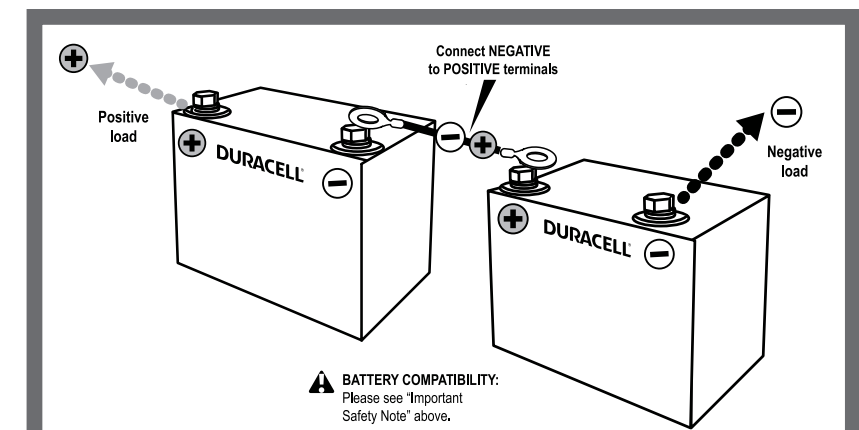
⚠ **IMPORTANT SAFETY NOTES:**
DO NOT connect your Lithium Iron Phosphate (LFP) battery to a standard Lead Acid (SLA/AGM). The differing voltages may damage one or both batteries and void your warranty. It is safe to connect this battery to another LFP battery, or to a Lithium-Ion (Li-Ion) battery using the options below.

Before connecting your batteries, please consult your vehicle and/or device user manuals to determine which option below will best suit your application.



Option 1: Parallel connection

Number of connected batteries	System voltage	Combined capacity
2	12.8V	200Ah
3	12.8V	300Ah
4	12.8V	400Ah



Option 2: Series connection

Number of connected batteries	System voltage	Combined capacity
2	25.6V	100Ah
3	38.4V	100Ah
4	51.2V	100Ah

Reference

Battery Cable Wire Gauge Guide

Please consult the guide below to determine the right length and wire gauge for your battery installation. Generally, the longer the cable, the thicker the wire gauge required. The maximum recommended battery cable length is 23 feet (7 meters).

100A Battery							
Wire Gauge (AWG) (copper wire)	8	6	4	2	1/0	2/0	4/0
Maximum Cable Length (feet) (2% voltage drop)	N/A	2.9	4.6	7.2	11.5	14.5	23

Troubleshooting Guide

Below is a guide which shows the typical faults that occur during normal operation and how to correct them and resume use. If you have additional questions, please contact Customer Service at (800) 300-1857.

Problem	What it means	What to do
Charger will not detect or charge the battery	The battery may be in a protection mode due to low or high temperature	Allow the battery temperature to warm or cool to within the operating temperature range (see Product Specifications below for details).

Frequently Asked Questions

1. Can I use this battery to start my car, truck or boat engine?

This battery is NOT designed with the cold crank current output needed to be an effective engine starting battery. This battery is designed to be a long lasting, reliable energy storage device.

2. Is it better to wire the batteries in parallel or series? The only reason to wire multiple batteries in series is to increase the voltage output to meet the requirements of your system.

This 12V battery can be combined with other lithium batteries in series to achieve 24V (2 batteries in series) or 48V (4 batteries in series). Do not connect more than 4 batteries together in parallel or series.

3. How long will this battery last?

It is designed to last 3000-5000 charge cycles maintaining 80% of it's energy capacity. Under normal use conditions, this means your battery will provide 10 or more years of service.

4. Can the battery be mounted in any position?

Yes, this battery is fully sealed and can be mounted in any position.

5. Can the battery get wet?

Yes, this battery's housing has an IP65 rating which will protect from dirt, dust, and temporary exposure to water. Do not submerge the battery in water.

6. Will cold weather damage the battery?

This battery is rated for safe storage at temperatures between -5°(23 °F) - 45°(113 °F). It can be used in cold temperatures down to -20°(-4 °F), but it cannot be recharged in temperatures below 0° (32 °F). Prolonged exposure to extreme temperatures may damage the cells and reduce your battery's functional life.

Reference (cont'd)

Product Specifications

Battery Specifications	
Chemistry	Lithium Iron Phosphate (LFP)
Capacity	100Ah (+/-1)
Voltage	12.8 Vdc
Energy	1.28 kWh
Charging voltage	14.6±0.2V
Cycle life	≥3,000 (100%DOD) / ≥6,000 (80%DOD)
Max continuous charge current	50A
Max continuous discharge current	100A

Protections (Battery Management System)

Protection circuits	Over charge, Over discharge, Over voltage, Under voltage, Over current (input/output), High temperature, Low temperature, Automatic cell balancing, Short circuit
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Temperature protection

Charge high-temperature protection	55±4°C / 131±7°F
Charge high-temperature recovery	50±4°C / 122±7°F
Discharge high-temperature protection	65±4°C / 149±7°F
Discharge high-temperature recovery	60±4°C / 140±7°F
Charge low temperature protection	0±4°C / 32±7°F
Charge low temperature recovery	5±4°C / 41±7°F
Discharge low-temperature protection	-20±4°C / -4±7°F
Discharge low temperature recovery	-15±4°C / 5±7°F

MPPT Solar Controller Settings

Charge voltage	14.6V
Over-voltage disconnect	15V
Under voltage reconnection	14.2V
Low voltage disconnect	10.8V
Low voltage reconnection	11.6V
Under voltage warning	12.4V

Certifications

Safety	UL1642, UL2054, UL62133
Transportation safety	UN38.3
IP rating	IP65 weather resistant

Operating and Storage Environment

Charge Temperature	0~+55°C / 32~131°F
Discharge Temperature	-20~+60°C / -4~140°F
Storage temperature	-5~+45°C / 23~113°F
Storage humidity	0~95%

Dimensions and Weight

Length	26.0 cm / 10.2 in.
Width	17.0 cm / 6.7 in.
Height	20.8 cm / 8.2 in.
Weight	25.4 lbs (11kg±0.5kg)

Registration / Additional Languages

Product Registration

For complete warranty coverage, please register your Duracell product within fourteen days of purchase.

Visit DuracellPower.com/Register

or scan the QR code below to register.



Additional Language Manuals

Manuales en idiomas adicionales • Manuels dans d'autres langues

Spanish and French language user manuals are available at duracellpower.com
Los manuales de usuario en español están disponibles en duracellpower.com
Les manuels d'utilisation en français sont disponibles sur duracellpower.com

Support and Warranty

Contacting Customer Support

If you experience any problems or have any questions regarding your Duracell product, free technical support is available. Call or email while you have access to your Duracell product.

Be prepared to provide the following information:

- Name, address and telephone number
- Name of the Duracell product
- Make and model of any items or devices that you are using with the Duracell product
- Symptoms of the problem(s) and what led to them
- Dated receipt, screenshot copy of original order confirmation or registration confirmation email

Technical Support is available by telephone:

U.S. and Canada (800) 300-1857

Outside of the US/Canada: (805) 437-7765

Written inquires should be directed to: Battery-Biz Inc.,

Duracell Product Inquiry

1380 Flynn Road, Camarillo, CA 93012, USA

Email inquiries may be sent to: info@DuracellPower.com

Recycling Information

Battery-Biz is committed to environmental responsibility and recommends that electronic devices be disposed of properly. Please contact your local city offices for information on recycling and disposal programs for e-waste.

For instructions on how to recycle this product visit <http://www.call2recycle.org>.

Ten Year Warranty

Limited Warrant

This product (Product) is warranted (Limited Warranty) by Battery-Biz Inc. (Distributor) against defects in material and workmanship under normal use and service to the original purchaser (Purchaser) for a period of ten (10) years (Warranty Period) from the original date of purchase. The Limited Warranty does not extend to any subsequent owner or other transferee of the Product. Purchaser shall retain the dated sales receipt as evidence of proof and date of purchase as it will be required for any warranty claim or service. In order to keep the Limited Warranty in effect, the Product must have been handled and used as described in the instructions

accompanying this Limited Warranty. The Limited Warranty does not cover any damage due to accident, improper storage, improper installation, modifications, unauthorized repair, normal wear and tear, failure to observe product specifications or safety warnings, force majeure, misuse, abuse or negligence. This Limited Warranty shall be null and void if Product's label(s) have been defaced, altered, or removed.

Remedies Under Warranty

With respect to a defective Product during the first three years of the Warranty Period, Distributor in its sole and absolute discretion, will either: (a) repair or replace such Product (or the defective part) free of charge or (b) refund the purchase price of such Product. Distributor will pay for shipping and handling fees to return the repaired or replacement product to the Purchaser during the first three years of the Warranty Period.

With respect to any defective Product during the last seven years of the Warranty Period, Distributor in its sole and absolute discretion, will either: (a) repair such Product (or the defective part) free of charge or (b) offer a new replacement product of the same (or equivalent) model as Product at a discount price of fifty percent (50%) off the listed retail price at the time the Product is returned to Distributor. Purchaser will have thirty (30) days from the date that Distributor provides notice to Purchaser that the Product shall not be repaired to exercise the option to use Purchaser's discount under this Limited Warranty to purchase a replacement product; Purchaser will pay customary shipping charges if Product is repaired or replaced at a discount purchase price during the last seven years of the Warranty Period.

Limitation Of Liability

Except to the extent of repairing or replacing Product as expressly stated in the Limited Warranty described herein, Distributor shall not be liable for any damages, whether direct, indirect, incidental, special, consequential, exemplary, or otherwise, including lost revenues, lost profits, loss of use of software, loss or recovery of data, rental of replacement equipment, downtime, damage to property, and third-party claims, arising out of any theory of recovery, including statutory, contract or tort. Notwithstanding the terms of any limited or implied warranty or in the event that the Limited Warranty fails in its essential purpose, in no event will Distributor's entire liability exceed the purchase price of the Product. Some states and provinces do not allow the exclusion or limitation of incidental or consequential damages so the above limitations or exclusions and as a result may not apply to Purchaser. This Limited Warranty gives Purchaser specific legal rights. Purchaser may have other rights which vary from state to state and province to province.

In order to be considered for coverage under this Limited Warranty, all warranty returns of Product to Distributor must include (1) a copy of the original receipt for the purchase of Product, (2) a letter from Purchaser referencing the Return Merchandise Authorization number issued by Distributor to Purchaser with a description of the problem, and (3) Purchaser's contact information including phone number and shipping address. Purchaser is responsible for the cost of the warranty return shipping and handling as well as any related claims that may arise.

Compatible Accessories

Maximize your battery performance, minimize your charging times.



Sample shown (Available models may vary)

The right charger makes all the difference when it comes to maintaining your LFP battery. We recommend the use of a battery charger that is specifically designed for the Lithium-Iron Phosphate chemistry for the most rapid and reliable charging.

Duracell Battery Charger/Maintainers provide an ideal economical support system for your battery. Available in a variety of power levels to suit your charging needs, these universal chargers work with both standard Sealed Lead-Acid batteries and Lithium batteries.

Additional Duracell battery charger features include:

- **Maintenance charging** allows you to keep your battery safely charged between uses — great for stored batteries or vehicles used only periodically or seasonally
- **Multi-stage charging** ensures optimal battery performance without overcharging
- **Selects the correct charging voltage** for your battery
- **IP65 weatherproof construction** is ideal for outdoor use
- **Select models are wall mountable** with the integrated mounting holes (hardware included)

Purchase your Duracell Battery Charger/Maintainer at <http://www.DuracellPower.com>