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Made in CHINA – US Patent number 9412994,9954207,11598306

STARTER BATTERY Manual

STARTER Manual

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Important Notes

PLEASE READ THE ENTIRE INSTRUCTION MANUAL BEFORE OPERATING YOUR IONIC STARTER BATTERY. SAVE THESE INSTRUCTIONS. REVIEW ALL CAUTIONARY MARKINGS ON THIS PRODUCT AND IN THIS MANUAL.

FULLY CHARGE THE BATTERY BEFORE FIRST USE AND CHARGE EVERY SIX (6) MONTHS FOR OPTIMAL PERFORMANCE.

YOUR IONIC STARTER BATTERY IS FITTED WITH BUILT-IN SAFETY PROTECTIONS VIA AN INTEGRATED BATTERY MANAGEMENT SYSTEM (BMS). THESE SAFETY PROTECTIONS MONITOR AND CONTROL THE UNIT. HOWEVER, PLEASE NOTE THAT THE BMS CIRCUITRY CAN BE DAMAGED IF THE BATTERY IS SHORTED OR EXPOSED TO A REVERSE POLARITY SITUATION.

PER IATA AND DOT INSTRUCTIONS, LITHIUM BATTERIES ARE TO BE SHIPPED AND TRANSPORTED AT 30% STATE OF CHARGE OR LESS. THE LI-ION BATTERY MUST BE TRANSPORTED IN ITS ORIGINAL OR EQUIVALENT PACKAGE AND IN AN UPRIGHT POSITION. IF THE BATTERY IS NOT INSTALLED IN EQUIPMENT, IT MUST BE TRANSPORTED IN THE ORIGINAL PACKAGE OR EQUIVALENT. BATTERIES ARE TESTED ACCORDING TO UN HANDBOOK OF TESTS AND CRITERIA, PART III, SUB SECTION 38.3 (ST/SG/AC. 10/11/REV.5). FOR TRANSPORT, THE BATTERIES ARE CATEGORY UN3480, CLASS 9, PACKAGING GROUP II.

WARNING! DO NOT use this product near or in the presence of propane tanks, natural gas or any other explosive fumes where electric sparks could cause ignition. Also follow instructions and caution markings on engine and listed in vehicle manual to reduce risk of battery explosion.

STARTER Manual

*"LITHIUMHUB is working to enhance current and future lithium-ion battery technology to reduce the present limitations and in doing so, offer products to consumers that outperform and are safer than those currently on the market" ~**Martin Koebler***

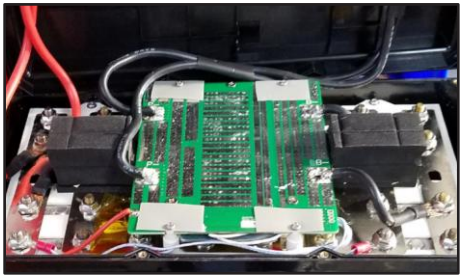
*Thank **You***

Thank you for choosing IONIC Lithium-ion Starter batteries. IONIC batteries are high quality, light weight, powerful, durable and portable power starter solutions.

Performance and safety are paramount in this innovative product. Our goal is to provide the ultimate power starter battery with the highest performance and complete reliability for long term use. We designed the IONIC Starter Battery to offer the best value in the industry. Thank you again for choosing LITHIUMHUB!

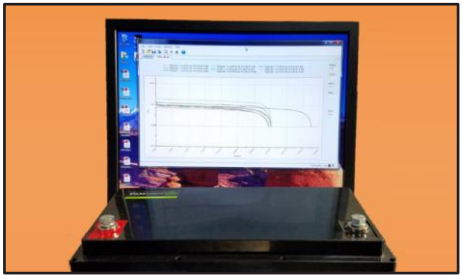
Starting power wherever you need it!™

Starter Features



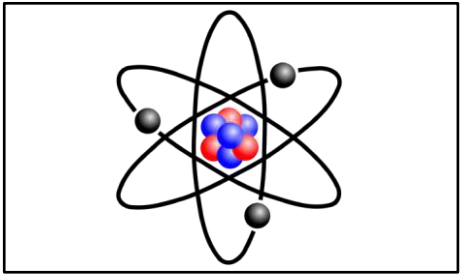
LITHIUMHUB BMS

LithiumHub's battery management system (BMS) is inside each battery case and uses high power MOSFETs to turn OFF or ON the power from the terminals instead of using bulky solenoids. This allows for compact, faster power switching with higher solid-state reliability. LithiumHub's patent awarded MOSFET configuration also allows for enhanced controls and protections from reverse polarity, and overheating.



Quality Engineering

LithiumHub' s innovation laboratory prides itself on the design and construction of its batteries using the highest quality components in all phases of design and construction. The LithiumHub built-in intelligent components guarantee the safety and quality of each LithiumHub product. Quad terminal configuration and the ability to be mounted in any direction make installation a snap.



Lithium Advantage

The obvious advantages are weight savings, higher cycles and low self-discharge rate versus old lead acid technology. In addition, lithium-ion Starter batteries do not require ventilation like lead-acid batteries as they do not vent explosive gasses under normal use. Our batteries are designed to replace flooded, AGM and gel cell Lead-acid batteries

Battery
Power Status

Short press the Function Button to display Battery Status Level.

LED **LOW** – Low battery level
LED **MID** – Medium battery level
LED **FUL** – Full battery level
LED BT/ERROR – App (Events Status Page)

To monitor the power percentage, use the "Red Ionic Batteries" App.

Power
Start Button

The starter battery has a built- in Power Button with LED displays. To start, long pressing the power button or tapping the power icon in the "Ionic Red Battery" App. Please start engine right away when activated.

Low
Maintenance

No water to add and no acid to spill, Lithium Hub Starter Batteries are ultra low maintenance. Our batteries can be installed in any orientation (upright or sideways) due to no fluid in the battery that could spill if the battery is placed on its side or at an angle. Great for Sports applications such as Side by Sides, UTVs, ATVs, personal watercraft, lawn mowers, commercial mowers and more.

- Charge level can be checked on the Starter Battery by short pressing the Function Button.
- Exact charge level can be checked with the Ionic Red Batteries APP via Bluetooth. (Download Ionic Red Batteries APP from either Apple Store or Play Store. Turn on the APP and check if the APP connects to the Starter Battery by pressing the ON and OFF icon button.)
- Long press the Power Start Button to start your engine.

Starter Battery Instructions

Activate the Starter Battery by either long pressing the Power Start Button on the battery or pressing the start button icon in the "Ionic Red Batteries" APP. Once activated, the LED lights on the battery will start blinking rapidly (the start button in the APP will turn green) and the engine is ready to start.

Once activated, the Emergency Start feature will also stay active until a discharge voltage of 13.6V is reached. An engine start attempt can be made any time when the unit is active. The Emergency Start will stay ON until the Emergency Start battery is fully discharged at ~10V and disconnects itself automatically from the vehicle battery system when the battery voltage drops below 13.6V, keeping the Emergency Starter at full charge and preventing the Emergency Start from discharging.

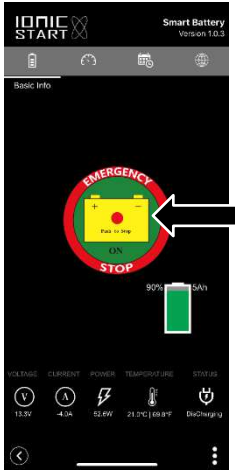
Any time the unit is being charged, such as from a vehicle alternator, the Emergency Start will turn ON to receive a charge. If the Emergency Starter is not used for 3 months, Bluetooth activations will not possible and it will need to be reactivated by manually long pressing start button on the unit or with a charging system.

Red Ionic Batteries App

Using Your APP Starter Feature

Starter Battery Dashboard

Basic Info Page
Push Button for the
Emergency Start



Tap The Button
To Turn the Starter
On or Off

When the time comes to start your engine, open the APP, “Ionic Red Batteries”. Simply tap the circular push button on the APP to turn **ON** the unit to start your engine. The circular button will turn green which will allow you to start your engine. The LED lights on the Starter Battery will start blinking rapidly, indicating the Starter Battery is active and ready to start the engine. To turn **OFF** the unit tap the circular push button on the APP again.

General information

Starter versus Deep Cycle batteries?

Starter batteries have high current cells and a Battery Management System(BMS) designed to handle the higher current required to start a vehicle or engine. Starter batteries deliver a large amount of current for only a short time and are not designed to be extended range energy storage devices. Deep Cycle Batteries have cells and a BMS designed for energy storage which requires a lower current, but they have a high capacity for a much longer run time. Also, "Starter" batteries use lithium-ion cells that have the ability to be fully charged and discharged and have long life with 100% Depth of Discharge (DOD). Most lead acid batteries experience significantly reduced cycle life if they are discharged more than 50%. In simple terms, a starter battery could be compared to a sprinter and a Deep Cycle battery would be a marathon runner. The two battery types are not interchangeable as the cell and BMS structures are different.

How long will my "Starter" battery last?

There are several factors that affect the life of a battery. Weather, temperature, recharge cycles, depth of discharge (DOD), discharge current, charging current, charging method, vibration and duration of static use can all have dramatic effects on battery life. A properly maintained Starter Battery should last roughly three times as long as a lead-acid battery used in similar conditions. Life expectancy is 8-10 years with normal use.

Battery Cycle Life

Battery manufacturers rate the cycle life of their batteries by comparing the level of discharge on the battery and the frequency of cycling. Higher battery discharge will result in a shorter cycle life. In reverse, a smaller discharge percentage will extend the expected cycle life of the battery as the battery will provide more charge/discharges. Lithiumhub estimates an average life cycle of its Starter Batteries at 3000 cycles with average use. As noted, life cycles will vary based on use parameters and operating conditions.

Battery Disposal

Batteries must NEVER be disposed of in household waste. Battery recycling is encouraged, so take your battery to a certified recycling depot at the end of its life to reduce environmental impacts. Always discharge the battery before disposal, and use electrical tape or another approved covering over the battery connection points to prevent short circuits. Dispose of the battery in accordance with local, state and federal laws and regulations. Batteries may be returned to the manufacturer if proper shipping regulations are followed. USA & Canada: Lithium Iron Phosphate batteries are subject to disposal and recycling regulations that vary by country and region. Always check and follow your applicable regulations before disposing of any battery. Contact the Rechargeable Battery Recycling Corporation (www.rbrc.org) for USA and Canada, or your local battery recycling organization. EC: Waste must be disposed of in accordance with relevant EC Directives and national, regional and local environmental control regulations. For disposal within the EC, the appropriate code according to the European Waste Catalogue (EWC) should be used. Other: Many countries prohibit the disposal of waste electronic equipment in standard waste receptacles. Note: The battery should be transported in <30% SOC.

State of Charge (SOC)

SOC (State of Charge) indicates approximately how much battery life remains on your Ionic Starter battery, based on the voltage reading.

Battery Charge Remaining	12V
100%	14.6V
80%	13.28V
60%	13.14V
40%	13.106 V
20%	12.89V

TABLE 3 - SOC PERCENTAGES BY VOLTAGE

Battery installation

Be sure to turn off all electrical components before wiring.

- Ionic Starter Batteries are equipped with connection terminals tailored for the most common use of each battery size and power rating. Each battery has 4 posts for convenience.
- Use an insulated wrench and do not over torque any screw connections.
- Connect the positive red wires to the positive (+) battery terminals and connect the black wires to the negative (-) battery terminals.
- If using flat washers, it is very important to ensure the battery cable lug connection is contacting the base surface of the terminal, and the washer is placed on top of the battery cable lug. Do not place washer between the battery terminal and the battery wire, which creates high resistance and can cause terminal meltdown. It is important that fasteners be tightened to the appropriate torque for each terminal type.

NOTICE: Battery Protection Circuit and “sleep” Mode

Your Ionic battery has a protection circuit that will attempt to put the battery in “sleep mode” if you have an over/under voltage situation, have reversed the polarity or if your motor/device pulls too much current(overload). Assuming the Battery Management System(BMS) was successful in protecting the battery and it was not damaged, you may need to “wake up" the battery. (Note: The Battery Management System(BMS) may not be able to protect the battery from damage in all circumstances.)

You can trigger the BMS to wake up the battery buy trying the following:

1) Try using a different power supply(charger). Some are better than others at triggering a wake-up.
2) Apply a small load like a low power light or appliance.
3) Wire the battery in parallel with a second battery - positive post to positive post, negative post to negative post.

Circuit protection

Battery Protection Type		12V
Overcharge Protection	Over-charge protection	~15.2V-
	Over-charge release	~14.4V-
	Over-charge release method	~<14.4V-
Over Discharge Protection	Over-discharge protection	~10V-
	Over-discharge release	~10.5V-
	Over-discharge release method	~<10.5V
Over Current Protection	Discharge over current protection	Battery Specific
	Protection delay time	Battery Specific
	Over current release method	Battery Specific
Battery Temperature Protection	Charge over temperature protection	65±5°C
	Charge over temperature release	50±5°C
	Discharge over temperature protection	65±5°C
	Discharge over temperature release	50±5°C
	Charge low temperature	-

TABLE 2 - CIRCUIT PROTECTION TYPES

Technical SPECIFICATIONS

Battery Model	IC-12V4-S4	IC-12V9-S6	IC-12V9-S7	IC-12V30-S7
Starter Battery Size	12V4Ah	12V9Ah	12V9Ah	12V30Ah
Voltage	12V	12V	12V	12V
Capacity	4Ah/ 51Wh	9Ah/ 115Wh	9Ah/ 115Wh	30Ah/ 384Wh
Chemistry	LiFePO4	LiFePO4	LiFePO4	LiFePO4
Weight	3.3lbs (1.5kg)	4.4lbs (2kg)	9lbs (4.1kg)	9.5lbs (4.3kg)
Dimensions	5.8"x3.2"x3.7" 148x82x93mm	6.9"x3.4"x5.1" 175x87x130mm	6.5"x4.9"x6.8" 166x125x173mm	6.5"x4.9"x6.8" 166x125x173mm
Life Cycles	3000 @ 80% DOD	3000 @ 80% DOD	3000 @ 80% DOD	3000 @ 80% DOD
Max Charge Voltage	14.6 ±0.1V	14.6 ±0.1V	14.6 ±0.1V	14.6 ±0.1V
Recommended Float Charge Voltage	13.9±0.1V	13.9±0.1V	13.9±0.1V	13.9±0.1V
Discharge Cut-Off Voltage	~8.0V	~8.0V	~8.0V	~8.0V
Output Voltage Range	8.0~14.6V	8.0~14.6V	8.0~14.6V	8.0~14.6V
Cold Cranking Amps	300	400	400	900
Peak Cranking Amps (3 sec)	500	720	720	1220
Operating Temperature	-20~60C -4F~140F	-20~60C -4F~140F	-20~60C -4F~140F	-20~60C -4F~140F
BCI Group Size	None	None	None	None
Terminals	M6	M6	M6	M6

TABLE 3 - TECHNICAL SPECIFICATIONS

Technical SPECIFICATIONS

Battery Model	IC-12V4-S8	IC-12V9-S8	IC-12V30-S8	IC-12V40-S9	IC-12V100-S4s
Starter Battery Size	12V4Ah	12V9Ah	12V30Ah	12V40Ah	12V100Ah
Voltage	12V	12V	12V	12	12V
Capacity	4Ah/ 51Wh	9Ah/ 115Wh	30Ah/ 384Wh	40Ah/512Wh	100Ah/ 1280Wh
Chemistry	LiFePO4	LiFePO4	LiFePO4	LiFePO4	LiFePO4
Weight	3.3lbs (1.5kg)	4.4lbs (2kg)	9.5lbs (4.3kg)	14.6lbs (6.6kg)	30.8lbs (14kg)
Dimensions	7.7”x5.1”x6.1” 196x130x155mm	7.7”x5.1”x6.1” 196x130x155mm	7.7”x5.1”x6.1” 196x130x155mm	9.1x6.9x7.5 230x175x190	12.9”x6.8”x10” 330x175x256mm
Life Cycles	3000 @ 80% DOD	3000 @ 80% DOD	3000 @ 80% DOD	3000 @ 80% DOD	3000 @ 80% DOD
Max Charge Voltage	14.6 ±0.1V	14.6 ±0.1V	14.6 ±0.1V	14.6 ±0.1V	14.6 ±0.1V
Recommended Float Charge Voltage	13.9±0.1V	13.9±0.1V	13.9±0.1V	13.9±0.1V	13.9±0.1V
Discharge Cut-Off Voltage	~8.0V	~8.0V	~8.0V	~8.0V	~8.0V
Output Voltage Range	8.0~14.6V	8.0~14.6V	8.0~14.6V	8.0~14.6V	8.0~14.6V
Cold Cranking Amps	300	400	900	1100	1800
Peak Cranking Amps (3sec)	500	720	1220	1400	3000
Operating Temperature	-20~60C -4F~140F	-20~60C -4F~140F	-20~60C -4F~140F	-20~60C -4F~140F	-20~60C (Heater) -4F~140F (Heater)
BCI Group Size	U1	U1	U1	Group 25	Group 31
Terminals	M6	M6	M6	3/8 thread posts	3/8 threads+car posts

TABLE 4 - TECHNICAL SPECIFICATIONS

Low Temperatures

Many battery users are unaware that lithium-ion batteries cannot be charged below 0°C (32°F). Although the pack appears to be charging normally, plating of metallic lithium can occur on the anode during a sub-freezing charge. This is permanent and cannot be removed with cycling. Batteries with lithium plating are also more vulnerable to failure if exposed to vibration or other stressful conditions. Lithium-ion batteries do warm up quickly with use as compared to lead-acid, so you may be able to get them above freezing with some use, allowing for a charge. It all depends on how cold of an environment you have, and caution is advised.

Lithium-ion batteries capacity decreases when operating below freezing temperatures(32F/ 0C). The current is still available, but the stored capacity will decrease. The colder the temperature the less capacity available. Both lead-acid and lithium-ion cells have increased internal resistance as the temperatures fall. Lithium batteries have more internal resistance in extreme cold temperatures of 0°F (-18°C) or lower, however, the batteries can be warmed up much quicker by simply putting a load on the battery, such as turning on your headlights for 15 to 30 seconds. Since Lithiumhub batteries have substantially lower mass than lead-acid batteries, they warm up much quicker.

Battery Preventative Maintenance

Inspect the exterior

Examine the outside appearance of the battery. The tops of the batteries and terminal connections should be clean and dry, as well as free of dirt and corrosion. The case should show no signs of cell expansion or swelling which could cause the case to bulge or split. If the cells have expanded they should not be used and immediately discarded per local regulations.

Check battery cables and connections. Replace any damaged cables and tighten any loose connections. Do no over torque, as you may damage the terminal.

Cleaning the exterior

Check the battery for cleanliness at regular intervals and keep terminals and connectors free of corrosion. Terminal corrosion may adversely affect the performance of the battery and present a safety hazard. Clean the top of the battery, terminals and connections with a cloth or brush. Do not allow any cleaning solution to get inside the battery if used. Keep the area around batteries clean and dry.

Battery Storage

- Charge batteries before placing in storage.
- Store in a cool, dry location, protected from the elements.
- Disconnect from equipment to eliminate potential parasitic loads that may discharge the battery.
- Batteries gradually self-discharge during transit and storage.
- Batteries in storage should be given a boost charge when they are at <70% SOC
- When batteries are taken out of storage, recharge before use.
- Check battery cables and connections. Replace any damaged cables and tighten any loose connections.

Limited Warranty

Five (5) year warranty

Period of Coverage: This product is warranted to the original purchaser from the original purchase date for five (5) years and is subject to the Warranty Coverage described herein. Registration is required for warranty coverage. Registration can be found on our website at: www.Lithiumhub.com.

Warranty Coverage: This product is warranted by LithiumHub, LLC to be free from defects in material and workmanship.

This Limited Warranty does not cover defects or damage due to accidents, acts of God, misuse, abuse, abnormal use, abnormal conditions, alternation of to the product, attachment to any unauthorized accessory; improper use of an electrical power supply that causes malfunction; loss of power; dropped or crushed product; tampering with or attempt to modify the product; unauthorized opening of the product; transportation damage; theft, vandalism, loss of use during the period the product is at a repair facility or otherwise awaiting parts or repair; Failure to operate this product in accordance with the instructions provided in this Owners' Manual supplied with this product. If product is used for commercial or industrial purposes the warranty will be void.

DISCLAIMER: No warranty, written or oral, other than the above warranty is valid with regard to this product. Manufacturer shall not in any way be liable to the purchaser or any third party for any damages the purchaser or any third party may suffer as a result of use, intended or unintended or misuse of this product in conjunction with any device, equipment or accessory other than the appropriate device or equipment for which the product is designed.

STARTER
Manual

Starting power wherever you need it! ™

WARNINGS

1. Keep out of reach of children.
2. Do not damage, drop or crush this product. Do not attempt to use this product if it has been dropped, punctured, crushed or damaged in any way including damage to the clamp or cables.
3. Do not insert foreign objects (including fingers and metal objects) into any input or output ports on the Power Pro. This item may short circuit causing personal injury or fire.
4. Do not expose unit to rain or snow. Do not charge this item in wet conditions.
5. Do not use this product in explosive environments (dust, bilge, gaseous fumes or flammable materials) or in the presence of flammable materials such as carpeting, paper, cardboard or upholstery etc.
6. Do not burn or incinerate this product.
7. Use only recommended attachments. Use of attachments NOT sold by Lithiumhub or included with the product may result in a risk of fire, electric shock or injury to persons or damage property.
8. Do not disassemble this product. Refer servicing to qualified service professional when service or repair is required. Failing to adhere to this may result in risk of fire or electric shock.
9. Never charge a frozen battery.
10. Store in a cool dry location and do not expose the unit to temperatures over +140F or below -4F.
11. Be sure to turn off all electrical components before wiring.
12. If the unit needs to be disposed of for any reason, please dispose properly by calling your nearest lithium battery recycle facility at 1-800-8-BATTERY.
13. If the product malfunctions or is having problems, discontinue use and contact LithiumHub at (704)360-9311, our website www.Lithiumhub.com or via email at info@lithiumhub.com

Customer Commitment

At LithiumHub we are committed to offering you the best value in the marketplace. If you have any questions or concerns, do not hesitate to contact us. If you need repair service, please contact us via phone or our website to make arrangements. Once you have a return authorization, please return the product for warranty service to Lithiumhub, LLC. Contact us at www.Lithiumhub.com, info@lithiumhub.com or call (704)360-9311 for return authorization number (RMA #) and return address for repairs or service.

www.Lithiumhub.com
Customer service at (704)360-9311
info@lithiumhub.com

Lithiumhub, LLC.
125 Tate Road Business
Norris, SC 29667

WARNING! RISK OF EXPLOSIVE GASES. Working in the vicinity of a lead acid battery is dangerous. Lead-acid batteries generate and vent explosive gases during normal operation. Always properly ventilated bilge or engine compartment before working in the vehicle's engine compartment. DO NOT use this product near or in the presence of propane tanks, natural gas or any other explosive fumes. Also follow instruction and caution markings on engine and listed in vehicle manual to reduce risk of battery explosion.

DO NOT INTENTIONALLY SHORT THE BATTERY TERMINALS

Your LITHIUMHUB Starter Battery is equipped with short-circuit protection in the event you accidentally short-circuit the battery. Do not intentionally short-circuit the battery terminals.

California Prop 65

WARNING: Pursuant to California Proposition 65, this product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

WARNING! RISK OF ELECTRIC SHOCK OR FIRE. Discontinue use of this product if it is damaged in any way.