



**ABYSS
BATTERY**

POWER YOUR PURSUIT.

**ONBOARD MARINE
LITHIUM BATTERY**

CHARGER

AB-CRG-12V/24V



AB-CRG-12V/36V



AB-CRG-12V



USER MANUAL

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THANK YOU

For purchasing Our On-Board Marine Battery Charger. Follow the relevant provisions in this manual throughout the operation, maintenance, and repair of this charger. The manufacturer state that they are not responsible for the results of its operation. If the user is involved in violation of such requirements, we are not responsible for the results of the operation.

QUALITY ASSURANCE

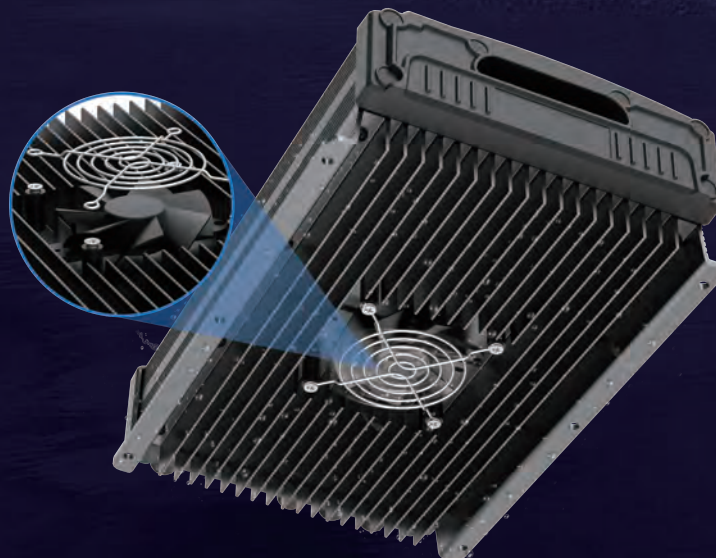
All of our marine battery chargers undergo strict quality testing. If you claim any manufacturing defect under the warranty period, we will provide a free replacement. Once the maintenance period is over, you will need to pay maintenance costs depending on the actual situation.

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TECHNICAL SPECIFICATIONS

Product Name	3-Bank Marine Charger with M8 Ring	3-Bank Marine Charger with M8 Ring	4-Bank Marine Charger with M8 Ring
Model	AB-CRG-12V/24V	AB-CRG-12V/36V	AB-CRG-12V
Nominal AC Input Voltage	105-125V AC	105-125V AC	105-125V AC
Nominal AC Input Frequency	60Hz	60Hz	60Hz
Output	2*12V/10A +24V/10A	2*12V/10A +36V/10A	4*12V/10A
Product Size	304*245*99mm	361*245*99mm	304*245*99mm
Charging Battery Type	Two banks have MODE buttons to choose charging battery type: 12V LiFePO4, 12V Wet, 12V AGM; The 3rd bank could charge 24V LiFePO4 Lithium Batteries	Two banks have MODE buttons to choose charging battery type: 12V LiFePO4, 12V Wet, 12V AGM; The 3rd bank could charge 36V LiFePO4 Lithium Batteries	Each bank has one MODE button to choose charging battery type: 12V LiFePO4, 12V Wet, 12V AGM
LED Indicators	Power & Battery Type & Charging Status LED Indicators		
Activate Function	Wake Up Function for Low Voltage of Lithium Battery (Press the mode button on the bank panel for 3-5 seconds to start this function)		
Full Cut-off Voltage	14.1V-14.4V for 12V Lead Acid Battery & 14.4V-14.7V for 12V AGM / LiFePO4 Lithium Battery & 28.8V-29.4V for 24V Lithium Battery & 43.3V-44.2V for 36V Lithium Battery		
Cooling Type	Aluminium stretched plate and waterproof cooling fan at the bottom of product for better heat dissipation		
Ingress Protection	Filled with pure epoxy resin for high waterproof level IP67		
Circuit Protection	Short-circuit Protection & Reverse Connection Protection & Overcharge Protection & Overtemp Protection		
Working Temperature Range	-10°C~40°C		
Nominal Temperature	25°C		
Relative Humidity	5%~95%		



IP67 WATERPROOF MARINE CHARGER

High Efficiency Heat Dissipation Performance

INTRODUCTION

Our onboard marine battery charger is specifically designed to charge your 12V LiFePO4/Lead acid/AGM batteries OR 24V LiFePO4 lithium battery OR 36V LiFePO4 lithium battery. This charger offers users extended battery life and reliability with its built-in protection features. By using this charger users can get the quickest, most intelligent, efficient charge, and experience longer run times and shorter charge times of the battery. Its characteristics are small volume, high stability, and high security.



FEATURES

- IP67 Rating.
- Can Charge 3-4 Batteries at the same time (qty. Based on Models).
- Marine-grade construction.
- Aluminium Stretched Plate and Waterproof Cooling Fan at the Bottom of Product for Good Heat Dissipation.
- LED Indicators for Battery Charging Percentage.
- Fast Charging with 10A for Each Bank.
- Wake Up Function for Low Voltage Lithium Batteries.
- Automatic Small Current Charge after 24 Hours of Fully Charged for LiFePO4 Battery.
- Short-circuit Protection.
- Reverse Connection Protection.
- Overcharge Protection.
- Overtemp Protection.



HOW IT WORKS

HOW IT WORKS:





When the charger is connected to AC voltage and the output cable is not connected to anything, the LED Power Indicator on the panel will be solid on, and bank panel will display one of the battery types selected last time.

Select the battery type to be charged by pressing the mode button. The charger will remember the selection each time and automatically determine the battery type selected last time after the next input connection.

Charging 12-Volt Batteries:

- Charging 12V LiFePO4 Lithium Batteries:** After the 12V LiFePO4 Lithium battery is correctly connected to the output cable of the charger, the charger enters 10A normal rated current charging mode. During the charging process, the LED Power Indicator is solid Red. As the battery voltage rises, the charging current gradually reduces. When the charging current drops to $0.8A \pm 0.3A$ automatically, the 100% LED indicator light will be solid green which indicates that the lithium battery has reached a full charge. Our charger will shut off automatically, and will not trickle charge. The green LED indicator light will keep solid during this process. After fully charged for 24 hours, Our charger will use $2.0A \pm 1A$ charging current to charge the battery again. After disconnecting the battery, the charger will return to standby state. All four Charging Status LED Indicators are off, LED Power Indicator and Battery Type LED Indicator will be on.

Charging 12V Lead Acid & AGM Batteries: After the 12V Lead Acid /AGM battery is correctly connected to the output cable of the charger, the charger enters 10A normal rated current charging mode. During the charging process, the LED Power Indicator is solid Red. As the battery voltage rises, the charging current gradually reduces. When the charging current reaches $0.8A \pm 0.3A$ automatically, the 100% LED indicator light will be solid green. After a full charge, if the battery voltage drops to $12.9V \pm 0.2V$, then the $2.0A \pm 1A$ current is used to trickle charge the battery. When the charging current drops to $0.8A \pm 0.3A$, the battery will stop charging. During this process, the 100%LED indicator light will be solid green. After disconnecting the battery, the charger will return to standby state. All four Charging Status LED Indicators are off, LED Power Indicator and Battery Type LED Indicator will be on.

Charging Status LED Indicators		Explanation
25% Red LED		The 25% Charge LED will light up when the battery voltage is lower than 12.5V.
50% Red LED		The 50% Charge LED will light up when the battery voltage is higher than 12.5V but lower than 13.7V.
75% Red LED		The 75% Charge LED will light up when the battery voltage is higher than 13.7V.
100% Green LED		All the Charge LEDs will light up when fully charged.





- Mode "ACTIVATE" Button:** Inside of the lithium battery their is a low voltage protection PCBA, when the lithium battery low-voltage protection starts (Sleep-Mode), it will not have voltage output at both output terminals of the battery, the charger will not be able to charge the lithium battery. After the LiFePO4 lithium battery is connected to the output cable of charger correctly, press the mode button to choose LiFePO4 lithium battery charging mode, then continuously **press the mode button on the bank panel for 3-5 seconds**, the LiFePO4 Battery Type LED Indicator will flash slowly. Our 12V lithium battery bank leads on the charger will pulse a output current of $2.0A \pm 1A$ to wake up the 12V lithium battery until lithium battery exits its low-voltage protection mode, then the charger enters a normal charging state, the LiFePO4 Battery Type LED Indicator will be solid red.

HOW IT WORKS

the Charging Status LED Indicators will be on based on a different percentage of the battery capacity. In the pulse charging state, if you continuously press and hold the button on the panel for 3-5 seconds, it will exit the "ACTIVATE" charging function, and the charger will enter standby state, only the LED Power Indicator will light up.

Charging the Bank on AB-CRG-12V/24V for 24V Batteries:

- Charging for 24V LiFePO4 Lithium Battery:** After the 24V LiFePO4 Lithium battery is correctly connected to the output cable of the charger, the charger enters 10A normal rated current charging mode. During the charging process, the LED Power Indicator is solid red. As the battery voltage rises, the charging current gradually reduces. When the charging current reaches $0.8A \pm 0.3A$, the 100% LED indicator light will be solid green. After the lithium battery is fully charged, our charger will shut off automatically, and the green LED indicator light will be solid green during this process. After 24 hours, our charger will send a $2.0A \pm 1A$ charging current to charge the battery again. After disconnecting with the battery, the charger will return to standby state. All four Charging Status LED Indicators are off, LED Power Indicator and Battery Type LED Indicator will be on.





Charging Status LED Indicators		Explanation
25% Red LED		The 25% Charge LED will light up when the battery voltage is lower than 25.0V.
50% Red LED		The 50% Charge LED will light up when the battery voltage is higher than 25.0V but lower than 27.4V.
75% Red LED		The 75% Charge LED will light up when the battery voltage is higher than 27.4V.
100% Green LED		All the Charge LEDs will light up when fully charged.

- Mode "ACTIVATE" Button:** Inside of our lithium batteries their is a low voltage protection mode, when the lithium battery low-voltage protection starts, it will not have voltage output at both output terminals of the battery, the charger will not be able to charge the lithium battery. After the LiFePO4 lithium battery is connected to the output cable of charger correctly, continuously press the mode button on the bank panel for 3-5 seconds, the Power LED Indicator will flash slowly. The 24V lithium battery bank charger will send a pulse output current of $2.0A \pm 1A$ to wake up the 24V lithium battery until lithium battery exits the low-voltage protection, then the charger enters normal charging state, the Power LED Indicator will be solid red, the Charging Status LED Indicators will be on based on different percentage of battery capacity. In the pulse charging state, if continuously press and hold the button on the panel for 3-5 seconds, it will exit the "ACTIVATE" charging function, and the charger will enter standby state, only the LED Power Indicator will light up.

Charging the Bank on AB-CRG-12V/36V for 36V Batteries:

- Charging for 36V LiFePO4 Lithium Battery:** After the 36V LiFePO4 Lithium battery is correctly connected to the output cable of the charger, the charger enters 10A normal rated current charging mode. During the charging process, the LED Power Indicator is solid red. As the battery voltage rises, the charging current gradually reduces. The charging current will automatically drop to $1.0A \pm 0.3A$ when the battery is fully charged, the 100% LED indicator light will be solid green. After the lithium battery is full, it will not have trickle charging current, and the green LED indicator light will keep solid green during this process. After fully charged for 24 hours, this charger will use $10.0A \pm 1A$ charging current to charge the battery again. After disconnecting with the battery, the charger will return to standby state. All four Charging Status LED Indicators are off, LED Power Indicator and Battery Type LED Indicator will be on.

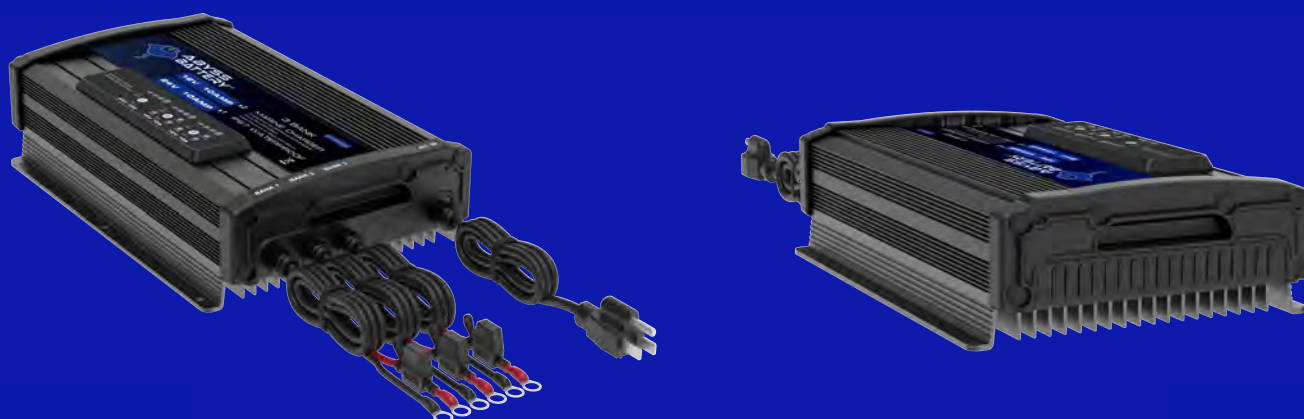
HOW IT WORKS

Charging Status LED Indicators		Explanation
25% Red LED		The 25% Charge LED will light up when the battery voltage is lower than 37.0V.
50% Red LED		The 50% Charge LED will light up when the battery voltage is higher than 37.0V but lower than 39.0V.
75% Red LED		The 75% Charge LED will light up when the battery voltage is higher than 39.0V.
100% Green LED		All the Charge LEDs will light up when fully charged.

- Mode "ACTIVATE" Button:** Our lithium batteries have a low voltage protection PCBA, when the lithium battery low-voltage protection starts, it will be in a sleep-mode and not have a voltage output on both output terminals of the battery, the charger will not be able to charge the lithium battery. After the LiFePO4 lithium battery is connected to the output cable of charger correctly, continuously press the mode button on the bank panel for 3-5 seconds, Power LED Indicator will flash slowly. The 36V lithium battery bank charger will send a pulse output current of 10.0A±1A to wake up and charge the 36V lithium battery. Our charger will then enter a normal charging state, the Power LED Indicator will be solid red, the Charging Status LED Indicators will be on based on different percentage of battery capacity. In the pulse charging state, if you continuously press and hold the button on the panel for 3-5 seconds, it will exit the "ACTIVATE" charging function, and the charger will enter standby state, only the LED Power Indicator will light up.

PROTECTION FUNCTION

- a. Short-circuited or Reverse Connection Protection: There is no DC output for the charger and the LED Power Indicator flashes quickly when the output terminals are short-circuited or reverse connected to the battery.
- b. No-load Protection: There is no DC output when the batteries are not connected.
- c. Over temperature Protection Function: When the temperature of the radiator inside of the charger reaches 176 °F, the charger will automatically reduce the output current for over temperature protection. . When the internal temperature of the charger cools down, the charging current will gradually adjust efficiency and charge normally again at 10 Amps. A waterproof cooling fan is installed outside the charger. When the bottom aluminum stretched plate's temperature is higher than or equal to 122°F the fan will work. When the bottom aluminum stretched plate's temperature is lower than or equal to 104°F, the fan will stop working.
- d. Automatic Shutdown after Full Charge: The charger will automatically turn off after the battery is fully charged according to the charger's programming. Only when AC power is disconnected or the battery is recommended, the charger will recharge.



OPERATION METHOD

1. MATCHING THE CHARGER WITH "AC POWER GRID" AND THE "BATTERY PACK".

Match for chargers and AC power grid: Before using the charger, please make sure the AC power grid voltage and its frequency are in the range specified in the "Basic Parameters" label. If the voltage is below the nominal input voltage, the charger will shut down for protection (AC voltage is less than 105V), and it will affect battery charging performance.

Match for the charger and battery pack: There is applied battery specification in the "Basic Parameters" label on the charger side. Please confirm whether battery type (12V LiFePO4 / Lead Acid / AGM OR 24V Lithium (LiFePO4) OR 36V Lithium (LiFePO4) Batteries), and battery pack rated voltage (V) match those on the "Basic Parameters" label. If they do not match, it is likely to cause less charge or overcharge and even cause permanent damage to the battery pack, bringing serious economic losses.

2. AC POWER WIRE, DC CHARGING CABLE POLARITY, AND PRECAUTIONS

AC input wire is at the side of the charger: L, N, and Ground are, marked on the input cable plug. Please distinguish correctly. L, N, earth on AC plug should correspond with those of socket outlet. The charging output cable is at the side of the charger: You can distinguish the positive and negative of the output cable by colors. Red cable is to connect battery "+" and Black cable is to connect battery "-". Using their M8 ring terminals on the charging output cable to connect with the correspond battery terminals. The polarity of the charging socket should be consistent with the polarity of the charging plug polarity, otherwise, it cannot charge. Please check before using.

USAGE INSTRUCTIONS

- First, firmly connect the charger output plug with the correct battery type, and then firmly connect the AC plug with the AC outlet.
- After the correct connection and battery type selection, the current will be output from the charger, at the same time the Charging Status LED Indicators will show the Battery Charging Percentage.
- After fully charged, please disconnect the plug between the charger and the alternating current.

ASSEMBLY AND DIMENSION

- When a fixed position is needed, it is recommended to fix the charger in a safe position.
- The safe space around the charger should be more than 30mm.
- The diameter of the fixed hole is 6.5mm, and it is recommended to fix it with M6 screws.



- The appliance is not for the usage of any person or children with retarded physical, sensory or mental abilities or lack of understanding and knowledge.
- Children must not clean and do any other maintenance of it without any supervision.
- Use this charger for charging 12V LiFePO4 / Lead Acid / AGM OR 24V Lithium (LiFePO4) OR 36V Lithium (LiFePO4) Batteries only based on different models.
- Do not use this charger to supply power to an extra-low-voltage electrical system or charge dry-cell batteries because charging dry-cell batteries may cause burst.
- If it is necessary to remove the battery from the vehicle/boat to charge it, always remove the grounded terminal from the battery first.
- Do not use the battery charger unless the battery voltage matches the output voltage rating of the charger.
- Always shield eyes when working near batteries. Do not put wrenches or other metal objects across the battery terminal or battery top. Arching or explosion of the battery can result.

CAUTION

- To reduce the risk of injury, the charger only charges 12V LiFePO4 / Lead Acid / AGM OR 24V Lithium (LiFePO4) OR 36V Lithium (LiFePO4) Batteries only based on different models. Other types of batteries may burst to cause personal injury and damage. Do not attempt to recharge any non-rechargeable batteries.
- Adequate ventilation during charging is required. Avoid exposure to heat, flames, or sparks.
- Never charge a frozen battery.
- Do not operate the charger if it has received a sharp blow, been dropped, or otherwise damaged. Have a qualified service technician examine and repair as needed.
- The battery charger must only be plugged into a Grounded socket-outlet.

MAINTENANCE

- Users should remove the dust from the charger shell for at least each half a year.
- Study all battery manufacturer's specific precautions such as removing or not removing cell caps while charging and recommended rates of charge.
- 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.
- Do not operate the charger in a closed-in area or restrict ventilation in any way. During charging, the battery must be placed in a well-ventilated area.
- This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience or knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety.

This product should not be disposed with other household wastes. This product requires separate disposal collection for electrical and electronic equipment.



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WARRANTY

Thank you for taking interest in the products we offer at Abyss Battery. This Limited Warranty applies to physical goods, and only physical goods purchased from Abyss Battery® Inc.

MANUFACTURER'S LIMITED WARRANTY

WARRANTY COVERAGE	2-YEAR FREE REPLACEMENT	AFTER 3 YEARS, 35% OFF A NEW REPLACEMENT UP TO 10-YEARS
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ABYSS BATTERY

COVERED UNDER WARRANTY

- If input wire, output wire, or plug is damaged.
- If input wire or output wire is artificially cut.
- If you open or take apart the charger without permission.
- The sealing label is torn or damaged.

NOT COVERED UNDER WARRANTY

- Breakdown faults and damage that is caused by force; if the damage is caused by transportation, misuse, or vandalism within the warranty period, you can **make a claim**.
- If the shell or the circuit board is damaged by users.
- The charger **becomes faulty** out of the warranty period.



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