Pro-Guide®
CHARGERS



ONBOARD MARINE

LITHIUM/LEAD ACID/AGM BATTERY CHARGER

USER MANUAL

Thank you for purchasing the Onboard Marine 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.

SAVE THESE INSTRUCTIONS

This manual contains important safety and operating instructions. To reduce the risk of injury, please read all instructions and follow them with each use of this product.

SAFETY INSTRUCTIONS

IMPORTANT SAFETY INSTRUCTIONS:
• DO NOT expose the plug or ring terminals to rain or snow. DO NOT submerge the charger in water or use it when the AC plug is wet.
• Pull the cord by the plug rather than by the cord when disconnecting the unit from the power source.
• DO NOT operate the charger with a damaged cord or plug.
• DO NOT operate the charger if it has received a sharp blow, it has been dropped or otherwise damaged in anyway. Damage to the power cable, the device or the charging cable increases the risk of an electrical shock. For inspection and repair, take the charger to a qualified technician.
• DO NOT disassemble the charger. Incorrect assembly could result in an electrical shock or fire.
• To reduce the risk of an electric shock, unplug the charger from the outlet before attempting any maintenance or cleaning. Turning off controls will not reduce risk.

WARNING – EXPLOSIVE ATMOSPHERES

Obey all signs and instructions. Do not operate product in any area with a potentially explosive atmosphere, including fueling areas or areas which contain chemicals or particles such as grain, dust or metal powders. This product is not intended for use where failure of product could lead to injury, death or severe environmental damage.

PERSONAL PRECAUTIONS:
• Consider having another person close by when working with a lithium battery.
• Have plenty of fresh water and soap in case battery acid encounters eyes, skin or clothing.
• Wear complete eye and clothing protection. Avoid touching eyes while working with a battery.
• If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters the eye(s), flood eye(s) with running cold water for at least 10 minutes and get immediate medical attention.
• Never smoke or allow a spark or a flame in the vicinity of a vehicle/boat battery, engine, or a battery charger.
• Take precautionary measures to avoid dropping a metal tool onto a battery. It is possible that it will spark, or short circuit the battery or other electrical parts that may cause an explosion.
• Remove personal metal items such as rings, watches, bracelets, and necklaces when working with a lithium battery. A lithium battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing a severe burn.
• DO NOT use the charger for charging dry-cell batteries that are commonly used with home appliances. These batteries may burst and cause injury to persons and damage property.
• Never charge a frozen battery.

PREPARING TO CHARGE:
• If a battery needs to be removed from the vehicle/boat, make sure that the grounded terminal is removed from the battery first. In order to avoid causing an arc, ensure that all accessories in the vehicle/boat are turned off.
• Ensure that there is adequate ventilation in the area when the battery is being charged.
• Clean battery terminals. Be careful to keep corrosion away from the eyes.
• Refer to the battery manufacturer's instruction manual for all specific charging instructions.
• Determine the voltage of the battery by referring to the owner's vehicle/boat manual. DO NOT use the battery charger unless the battery voltage matches the output voltage rating of the charger.

CHARGER LOCATION:
• Place charger as far away from the battery as the DC cable permits.
• DO NOT place a charger directly above a battery that is being charged. Gases from the battery will corrode and damage the charger.
• DO NOT operate charger in an area with restricted ventilation.
• DO NOT set the battery on top of the charger.

FOLLOW THESE STEPS WHEN THE BATTERY IS INSTALLED IN THE VEHICLE/BOAT.

WARNING: A SPARK NEAR THE BATTERY MAY CAUSE AN EXPLOSION. TO REDUCE THE RISK OF A SPARK NEAR THE BATTERY:

a. Position AC and DC cords to reduce the risk of damage by the hood, the door, or any moving engine part.
b. Stay clear of fan blades, belts, pulleys, and other parts that can cause injury to persons.
c. Before charging, check the polarity of the battery posts. POSITIVE (POS, P, +) battery posts usually have a larger diameter than the NEGATIVE (NEG, N, -) battery post.
d. Determine which battery post is grounded/connected to the chassis. In most vehicles/boats, the negative post is grounded to the chassis, follow step (e). If the positive post is grounded follow step (f).
e. For negative grounded vehicles/boats, connect the POSITIVE (red) ring terminal from the battery charger to the POSITIVE (POS, P, +) ungrounded battery post. Connect the NEGATIVE (black) ring terminal to the vehicle/boat chassis or engine block away from the battery. DO NOT connect the ring terminal to a carburetor, a fuel line, or to any sheet-metal body part. Connect the ring terminal to a heavy gage metal part of the frame or to the engine block.
f. For positive grounded vehicles/boats, connect the NEGATIVE (black) ring terminal from the battery charger to the NEGATIVE (NEG, N, -) ungrounded battery post. Connect the POSITIVE (red) ring terminal to the vehicle/boat chassis or to the engine block away from the battery. DO NOT connect the ring terminals to a carburetor, to a fuel line, or to any sheet-metal body part. Connect the ring terminal to a heavy gage metal part of the frame or to the engine block.
g. When disconnecting the charger, disconnect the DC output ring terminals first, then unplug the AC cord from the electrical outlet.

FOLLOW THESE STEPS WHEN THE BATTERY IS OUTSIDE THE VEHICLE/BOAT.

WARNING: A SPARK NEAR THE BATTERY MAY CAUSE AN EXPLOSION. TO REDUCE RISK OF A SPARK NEAR THE BATTERY:

a. Plug the AC cord from the charger into the electrical outlet. Press the MODE button to choose the charging battery type.
b. Check the polarity of the battery posts. POSITIVE (POS, P, +) battery posts usually have a larger diameter than the NEGATIVE (NEG, N, -) battery post.
c. Attach a 6-gauge AWG insulated battery cable that is at

least 60 cm (24 inch) long to the NEGATIVE (NEG, N, -) battery post.
d. Connect the POSITIVE (red) charger ring terminal to the POSITIVE (POS, P, +) post of the battery.
e. Position yourself and the free end of the cable as far away from the battery as possible, then connect the NEGATIVE (black) charger ring terminal to the free end of the cable connected to the NEGATIVE terminal.
f. DO NOT face the battery when making the final connection.
g. When disconnecting the charger, always do so in reverse sequence of the connecting procedure. Also break the first connection while as far away from the battery as physically possible.



The supply cord cannot be replaced. If the cord is damaged the appliance should be safely disposed.

Examine the battery charger regularly for damage, especially the cord, plug and enclosure. If the battery charger is damaged, it must not be used until it has been repaired.

TECHNICAL SPECIFICATIONS

PRODUCT	Multi Chemistry Marine On-Board Charger									
NAME MODEL	PGC-110	PGC-116	PGC-210	PGC-310	PGC-410	PGC-510	PGC-1224	PGC-1236	PGC-1236X	PGC-21236
NOMINAL INPUT	105-125V AC,60Hz									
OUTPUT	12V 10A	12V/16V 10A	2x12V 10A	3x12V 10A	4x12V 10A	5x12V 10A	1*12V 10A +1*24V/10A	1*12V 10A +1*36V/10A	1*12V 20A +1*36V/10A	1*12V10A +1*12V/16V 10A +1*36V 10A
PRODUCT SIZE	153x253x 98 mm	153x253x 98 mm	152x253x 98 mm	230x253x 98 mm	272x253x 98 mm	334x253x 98 mm	208x253x 98 mm	266x253x 98 mm	334x253x 98 mm	373x253x 98 mm
CHARGING BATTERY TYPE	Lead Acid AGM LiFePO4	12V AGM, LiFePO4, 16V LiFePO4	Lead Acid AGM LiFePO4	Lead Acid AGM LiFePO4	Lead Acid AGM LiFePO4	Lead Acid AGM LiFePO4	12V Lead Acid, AGM, LiFePO4, 24V LiFePO4	12V Lead Acid, AGM, LiFePO4, 36V LiFePO4	12V Lead Acid, AGM, LiFePO4, 36V LiFePO4	12V AGM, LiFePO4, 16V LiFePO4, 36V LiFePO4
LED IND	Power & Battery Type & Charging Status LED Indicators									
ACTIVE 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	16V Battery Full Voltage 18-18.3V	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								16V Battery Full Voltage 18-18.3V
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 IP68									
CIRCUIT PROTECTION	Short-circuit Protection & Reverse Connection Protection & Overcharge Protection & Overtemp Protection									
WORKING TEMP RANGE	-10°C-40°C									

INTRODUCTION

The onboard marine Lithium/Lead acid/AGM 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 1-5 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 of lithium battery
- Automatic small current charge after 24 hours of fully charged for LiFePO4 battery
- Short-circuit protection
- Reverse connection protection
- Overcharge protection
- Overtemp protection

INDICATIONS

	Red(2 LED in the bottom) and Yellow(second LED from the Top)-Charging Green(1st LED on the top)-Fully charged
	12V battery type indicator
	AC power is connected and charger standby
	Only for 12V Short press it to select the battery type to charge. for fully depleted lithium batteries, long press it for 3-5 seconds to wake up the BMS and charge.
	For 16V/24V/36V fully depleted batteries, long press this button for 3-5 seconds to wake up the BMS and charge.

OPERATION

- Plug the charger into AC power, all POWER indicator will be lit up
- For 12V bank with MODE button, short press MODE to choose battery type
- For 24V/36V banks(if have), no more operations
- Connect the DC rings with your battery, the power level indicators will be lit up.

ACTIVATE FUNCTION

For fully depleted Lithium batteries which can not be charged, follow below step:

- Plug the charger into AC power, all POWER indicator will be lit up
- For 12V bank with MODE button, short press MODE to choose battery type to Lithium, then long press MODE button for 3-5s until the indicator is flashing to wake up the BMS.
- For 24V/36V banks(if have) with ACTIVATE button, long press it for 3-5s until the indicator is flashing to wake up the BMS.

CAUTION：DO NOT REVERSE THE POLARITY AFTER ENTER THE ACTIVATE MODE

PROTECTION FUNCTION

a. Protection for Short-circuited or Reverse Connection: 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. Overtemperature Protection Function: When the temperature of the radiator inside the charger is more than

or equal to 80˚C±5˚C, the charger will automatically reduce the output current for overtemperature protection. When the temperature is higher, the charging current will be lower. When the internal temperature drops, the charging current will gradually increase, and finally recovery to 10A. A waterproof cooling fan is installed outside the charger. When the bottom aluminium stretched plate's temperature is higher than or equal to 50˚C±5˚C, the fan will work. When the bottom aluminium stretched plate's temperature is lower than or equal to 40˚C±5˚C, the fan stops working.
d. Automatic Shutdown after Full Charging: The charger automatically turns off after the battery is fully charged according to the charger's program. Only when AC power is disconnected or the battery is recommended, the charger can 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: I, N, and Earth are, marked on the input cable plug. Please distinguish correctly. I, 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.

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 on the bottom aluminium stretched plate is 6.5mm, and it is recommended to fix it with M6 screws.

WARNING

• 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 an earthed 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 of 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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