11 STAGE AUTOMATIC SMART CHARGER

7.2A 6/12V Car, Motorcycle & Marine

MODEL:PMMC-07

PRIOR TO USE, READ AND UNDERSTAND PRODUCT SAFETY INFORMATION.
Failure to follow the instructions may result in ELECTRICAL SHOCK, EXPLOSION, or FIRE, which may result in SERIOUS INJURY, DEATH, DAMAGE TO DEVICE or PROPERTY.
Do not discard this information.

Intertek 5022161
Conforms to UL Std.1236
Cert. to CSA Std. C22.2 No.107.2

IP65 RATED

Lithium Compatible

About PMMC-07

The Smart Battery Charger has 11 steps in each charge mode,it represents some of the most innovative and advanced technology on the market, making each charge simple and easy. It is quite possibly the safest and most efficient charger you will ever use. The Charger have REPAIR mode ,you can use this mode to recovery storing, old, idle, damaged, stratified or sulfated batteries. It is designed for charging all types of 12V lead-acid, including Wet(Flooded), Gel, MF(Maintenance-Free), CA(Calcium), EFB(Enhanced Flooded Battery), AGM(Absorption Glass Mat) and 6V lead-acid battery. It is suitable for charging battery capacities from 2 to 230 Amp-Hours and maintaining all battery sizes.

It is designed also for charging the $LiFePO_4$ (4 series) battery, and the charging mode select AGM/STD.

Supply Mode 13.6V - The charger is operating at a constant voltage of 13.6V. This is the maintenance mode for applications where maximum capacity from the battery is important, like floor sweepers and golf carts.
Note that the Spark protection function is suppressed in this mode.

Before using the charger, carefully read the battery manufacturer's specific precautions and recommended rates of charge for the battery. Make sure to determine the voltage and chemistry of the battery by referring to your battery owner's manual prior to charging.

Using 13.6V Supply. 13.6V Supply converts the charger to a constant voltage DC power supply. It can be used to power 12VDC devices, including; tire inflators, oil changers, coffee pots, seat heaters and more. As a power supply, it can also be used to retain a vehicle's on-board computer settings during battery repair or replacement. 13.6V Supply provides 13.6-volts at 7.2A （MAX） with overload protection.

IMPORTANT SAFETY INFORMATION

Please read all Warnings and Cautions carefuly and thoroughly before using this Charger. Failure to do so may result in personal injury and or damage to the charger which will void the warranty.

CAUTION: Personal Safety

- Use of an attachment not recommended or sold by the battery charger manufacturer may result in a risk of fire, electric shock, or injury to persons.
- To reduce risk of damage to electric plug and cord, pull by plug rather than cord when disconnecting charger.
- An extension cord should not be used unless absolutely necessary. Use of improper extension cord could result in a risk of fire and electric shock.
- Do not operate charger with damaged cord or plug-replace the cord or plug immediately Do not operate charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman.
- To reduce risk of electric shock, unplug charger from outlet before attempting any maintenance or cleaning. Turning off controls will not reduce this risk.
- 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.
- Remove personal metal items such as rings, bracelets, necklaces, and watches when working with batteries. Batteries produce a short-circuit current high enough to weld a ring or other similar objects to metal, causing a severe burn.
- Someone should be within range of your voice, or close enough to come to your aid when you work near batteries, Wear eye protection and clothing protection. Avoid touching your eyes while working near batteries.
- Have plenty of fresh water and soap nearby in case battery acid contacts skin, clothing, and eyes.
- Keep a supply of baking soda on hand in the area of the batteries. Baking soda neutralizes lead-acid battery electrolyte.
- If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters your eyes, immediately flood them with running cold water for at least twenty minutes and get medical attention immediately.
- DO NOT attempt to fix the unit by disassembling or modification. You can cause self injury and disassembling and modifying the unit will void your warranty.

- Ensure that the cable does not jam or comes into contact with hot surfaces or sharp edges.
- Connection to the mains supply must be in accordance with the national regulations for electrical installations.

WARNING: Explosion and Fire Hazard

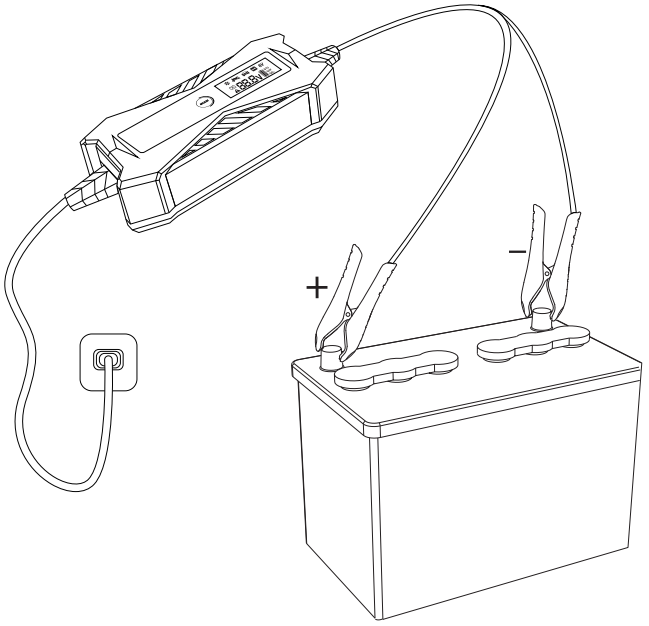
- **RISK OF EXPLOSIVE GASES.**

  a) WORKING IN 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 YOU FOLLOW THE INSTRUCTIONS EACH TIME YOU USE THE CHARGER.

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

- Never charge a frozen battery.
- Never charge a damaged battery.
- Never allow red and black clamps to touch each other or another common metal conductor. This could create a sparking.
- Make sure the area around the battery and charger is well ventilated. DO NOT use this product in anenclosed space. The internal battery may vent explosive hydrogen gas, which can be ignited by sparks from electrical connections.
- DO NOT use this product where there are flammable fumes or gases, such as in the bilge of a gasoline-powered boat, or near propane tanks.
- Never smoke or allow a spark or flame in vicinity of the engine or batteries.
- Be careful not to drop a metal object on the battery or allow a metal tool to simultaneously touch the positive and negative cable ends or battery terminals. It might spark or short-circuit the battery and cause an explosion.
- If you need to remove the clip from the battery terminal, ALWAYS remove the clip from the positive terminal from the battery first. Make sure all accessories are off so you don't cause an arc.
- The battery terminals exposed at the clamps have enough energy present to cause a spark, creating an explosion hazard, or to cause burns if a metal object contacts both terminals. NEVER allow the red and black clips to touch each other or a common metal conductor.
- DO NOT expose this product to water, rain, snow, condensation, or spray.
- Never allow battery acid to drip on charger when reading electrolyte specific gravity or filling battery.

A. Connect the Charger to Battery



B. CHARGING BATTERY INSTALLED IN VEHICLE

Note: Connect and disconnect the DC output clamps ONLY AFTER removing the AC plug from the electrical outlet. Never allow the DC output clamps to touch each other. This may cause a spark.

CHOOSE THE GROUND SYSTEM YOU WILL USE AND FOLLOW THE STEPS

Connecting to a negative-grounded system:

1. Connect the positive(+) red clip from the battery charger to a positive(POS,P,+) ungrounded post of the battery.

2. Connect the negative(-) black clip to the vehicle chassis or engine block away from battery.
DO NOT connect clip to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.

Connecting to a positive-grounded system:

1. Connect the negative(-) black clip from battery charger to the negative(NEG,N,-) ungrounded post of battery.

2. Connect the positive(-) red clip to the vehicle chassis or engine block away from battery.
DO NOT connect clip to carburetor, fuel lines, or sheet-metal body parts. Connect to a heavy gauge metal part of the frame or engine block.

AFTER COMPLETING STEPS 1-2 FROM CHOSEN GROUND SYSTEM, CONTINUE TO 3-4

3. Connect charger AC supply cord to electric outlet.

4. When disconnecting charger, disconnect the AC cord first, remove the clip from vehicle chassis, and then remove the clip from battery terminal in that order.

C. CHARGING BATTERY REMOVED FROM VEHCILE

CAUTION: Connect and disconnect the DC output clamps only after removing the AC plug from the electrical outlet. Never allow the DC output clamps to touch each other. This may cause a spark.

1. Connect the positive(red) charger clip to the positive(POS,P,+) post of battery.

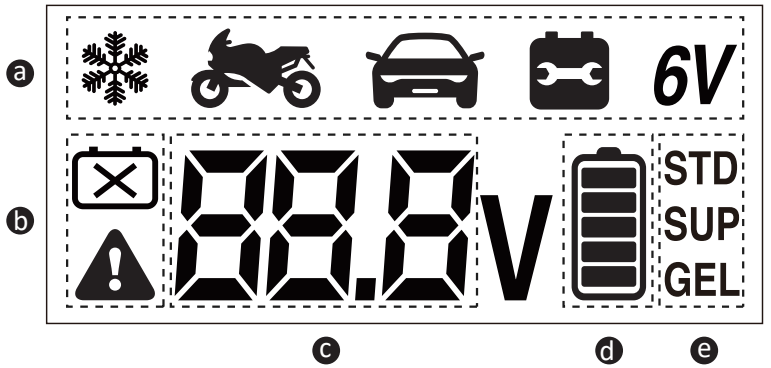
2. Then connect the negative(black) charger clip to negative(NEG,N,-) post of battery.

3. Do not face battery when making the final connection.

4. Connect charger AC supply cord to electric outlet.

5. When disconnecting charger, disconnect the AC supply cord first. Always disconnect the clamps in the reverse sequence of the connecting procedure

LCD Display Manual



** Keep pressing the Mode button for more than 3 seconds, you can change between* ⓐ *and* ⓔ .

ⓐ Charging Modes

cold mode /AGM 3.6A charge mode 7.2A charge mode

repair mode 6V battery mode SUP 13.6V 7.2A

ⓑ Failure Display

dead battery error

ⓒ Voltage or Failure Code Display

- When the battery is in charging process, the LCD shows the battery voltage.
- When the battery can't be charged, the "FAL" will show up.
- The "000V" will show up once there is no battery connected.
- When the output of the battery is short circuit, or the battery voltage is less than 2V, the "LO" will show up.
- When you contact the wrong positive or negative port, "REV" will show up.
- When the LCD screen shows "FUL" means the battery is fully charged.

ⓓ Battery Capacity or Charging Display

ⓔ Battery Type

It is important to understand the differences and purpose of each charge mode and battery type.Do not operate the charger until you confirm the appropriate charge mode and battery type for your battery.

Below is a brief description:

	STD	SUP	GEL
	14-200Ah 14.8V/7.2A -4 °F - 41 °F (-20 - 5 ℃)	14-200Ah 13.6V/7.2A -4 °F - 41 °F (-20 - 5 ℃)	14-200Ah 14.8V/7.2A -4 °F - 41 °F (-20 - 5 ℃)
	2-100Ah 14.4V/3.6A 41 °F - 122 °F (5 - 50 ℃)	2-100Ah 13.6V/7.2A 41 °F - 122 °F (5 - 50 ℃)	2-100Ah 14.2V/3.6A 41 °F - 122 °F (5 - 50 ℃)
	14-200Ah 14.4V/7.2A 41 °F - 122 °F (5 - 50 ℃)	14-200Ah 13.6V/7.2A 41 °F - 122 °F (5 - 50 ℃)	14-200Ah 14.2V/7.2A 41 °F - 122 °F (5 - 50 ℃)
	14-200Ah 15.8V/1.5A Max 41 °F - 122 °F (5 - 50 ℃)	14-200Ah 13.6V/7.2A 41 °F - 122 °F (5 - 50 ℃)	14-200Ah 15.8V/1.5A Max 41 °F - 122 °F (5 - 50 ℃)
6V	2-100Ah 7.2V/3.6A 41 °F - 122 °F (5 - 50 ℃)		

Using 12V Repair

12V Repair is an advanced battery recovery mode for repairing and storing, old, idle, damaged, stratified or sulfated batteries. Not all batteries can be recovered.

Batteries tend to become damaged if kept at a low charge and/or never given the opportunity to receive a full charge. The most common battery problems are battery sulfation and stratification. Both battery sulfation and stratification will artificially raise the open circuit voltage of the battery, causing the battery to appear fully charged, while providing low capacity.

Use 12V Repair in attempt to reverse these problems. For optimal results, take the 12-volt battery through a fullcharge cycle, bringing the battery to full charge, before using this mode.12V Repair can take up to four(4) hours to complete the recovery process .

CAUTION: USE THIS MODE WITH CARE. THIS MODE IS FOR 12-VOLT LEAD-ACID BATTERIES ONLY.
THIS MODE USES A HIGH CHARGING VOLTAGE AND MAY CAUSE SOME WATER LOSS IN WET
(FLOODED) CELL BATTERIES. BE ADVISED, SOME BATTERIES AND ELECTRONICS MAY BE SENSITIVE TO HIGH CHARGING VOLTAGES. TO MINIMIZE RISKS TO ELECTRONICS, DISCONNECT THE BATTERY BEFORE USING THIS MODE.

"REP" means that the charger is repairing the battery. If the battery is still faulty after several repairs, the LCD will display "FAIL". If the battery is repired successfully, the charging process will continue.

Charging Times

The estimated time to charge a battery is shown below. The size of the battery (Ah) and its depth of discharge (DOD) greatly affect its charging time. The charge time is based on an average depth of discharge to a fully charged battery and is for reference purposes only. Actual data may differ due to battery conditions. The time to charge a normally discharged battery is based on a 50% DOD.

Battery Size Ah	Approx. Time to Charge In Hours **6V**	**12V**
20	1.6	1.6
60	4.8	4.8
100		8
150		12
230		18.4

MALFUNCTIONS AND SOLUTIONS

Problem	Cause	Solution
 (FAL)	Possible battery short and can not be repaired.	Do not use/scrapped.
	The battery is too big for the charger or the charging current is too small.	Switch to a larger charging current.
	Damaged battery.	Do not use it.
 (REV)	Reverse polarity.	Check the polarity. Connect the red clip to the positive pole and the black clip to the negative pole of the battery.
 (LO)	The battery voltage is lower than 2V.	·Set the charger to the repairing mode. The charger will be ok to use after repairing. ·If the battery is short-circuited, the charger will display the dead battery symbol and the battery need to be scrapped; ·Remove the load device immediately.
 (OUP)	The voltage of the battery exceeds the voltage mode of the charger.	In the 6V mode, check if it is a 12V battery; In the 12V mode, check if it is a 24V battery.
 (OCP)	Overcurrent protection.	Do not use the battery while charging it. Remove the load device immediately.
 (OTP)	Over temperature protection.	Do not use the charger until it is cool.

 ** CHE (a short form of CHECK) is a special function for the charger to automatically determine whether the battery is dead. If the battery voltage can be maintained within a few minutes, indicating that the battery is good, the charger will automatically enter the floating charge stage. If the battery voltage cannot be maintained and the voltage is lower than the set value within a few minutes, the charger will automatically enter the repair mode. After the repair is completed, the charger will continue to charge the battery again. If there are still problems after repairing, the charger will display a malfunction symbol.*

TECHNICAL SPECIFICATIONS

Rated Input Voltage AC:	110-120 VAC, 50-60Hz
Working Voltage AC:	85-130 VAC, 50-60Hz
Input Current:	2.2A rms (at full charging current)
Efficiency:	85% Approx.
Power:	108W Max
Charging Voltage:	Various
Charging Current:	3.6A(6V),3.6A(12V),7.2A(12V)
Low-Voltage Detection:	3V (12V), 3V (6V)
Back Current Drain:	1mA
Ambient temperature:	-4°F to +122°F (-20˚C to +50˚C) Output power is reduced automatically when temperature than 40˚C
Charger Type:	11 Step, Smart Charger
Type of Batteries:	6V & 12V
Battery Chemistries:	Wet, Gel, MF, CA, EFB, AGM & $LiFePO_4$ (4 series)
Battery Capacity:	2-200Ah(12V), 2-100Ah (6V), Maintains All Battery Sizes
Housing Protection:	IP65
Cooling:	Natural Convection
Dimensions (L x W x H):	8.66 x 3.74 x 2.36 Inches
Weight:	851.6g
Authentication:	ETL , BC

** Back current drain is the current that drains the battery if the charger is not connected to the mains. Battery chargers has a very low back current.*

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