

POWERTECH PLUS

6V / 12V, 4Amp 4 Stages Charging Smart Battery Charger

MB3611 User Manual



Thank you for purchasing this charger, please read this manual carefully before use to ensure your safety and optimal use of your product.

We recommend to keeping this manual for future reference.

Suitable for 6/12V Normal Lead Acid, Sealed, Gel or Lipo4 Batteries between 5-120Ah

IMPORTANT SAFETY INSTRUCTIONS

Gases

When the battery is being charged you may notice bubbling in the fluid caused by the release of gas. As the gas is flammable no naked lights should be used around the battery, and the area should be kept well ventilated.

Because of this risk of explosive gas only connect and disconnect the battery leads when the mains supply is disconnected.

Type of batteries

This charger is only suitable for normal lead acid, sealed, gel or Lipo4 batteries and should not be used to recharge NICAD or any other type of battery.

Points of note

- When not in use, store the charger in a dry area to avoid moisture damaging the internal parts.

Repair

- The Battery Charger should not be opened. Any attempt at modification or repair by the user will entail the loss of your guarantee.
- The mains supply cord of this appliance can not be replaced; if the cord is damaged, the appliance should be discarded.

Danger!

- Avoid getting electrolyte on your skin or clothes. It is acidic and can cause burns. If this occurs you should rinse the affected area with water immediately.
- If it gets into your eyes - wash thoroughly and seek medical attention immediately.
- Never charge a frozen battery. If battery fluid (electrolyte) becomes frozen, bring battery into a warm area to allow battery to thaw before you begin charging. Never let a battery on top of charger or vice versa.
- Do not touch the battery clamps together when the charger is on.
- Never operate charger if it has received a hard blow, been dropped, or otherwise damaged. Take it to a qualified professional for inspection and repair.
- Be sure to position the charger power cord to prevent it from being stepped on, tripped over, or damaged.
- Never pull out the plug by the cord when unplugging the charger. Pulling on the cord may cause damage to the cord or the plug.

Precautions When Working with Batteries

- If battery acid contacts skin or clothing, wash immediately with soap and water. If acid enters eye, immediately flood eye with running cold water for at least 20 minutes and get medical attention immediately.
- Never smoke or allow a spark or flame in vicinity of battery or Engine.

- Do not drop a metal tool on the battery. The resulting spark or short-circuit on the battery or other electrical part may cause an explosion.
- Remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery.
- A lead-acid battery can produce a short-circuit current high enough to weld a ring or the like to metal, causing severe burns.

FEATURES

Automatic and Intelligent 4-Stage Charging Curve

The MB3611 is controlled by a microprocessor with 4 stage charging characteristic for charging batteries automobiles, motorcycles, snow mobiles, tractors, personal watercraft, boats etc..

A microprocessor senses the condition of the battery to provide the right current and voltage to the battery (charging characteristic). This will give the best effect on charging and give the longest life to battery.

Charging characteristic:

Battery Test and Pre-charge (Stage 1):

Check the battery voltage to make sure battery connections are good and the battery is in a stable condition before beginning the charge process

Bulk (Stage 2):

Major charging stage where the battery receives the majority of its charge.

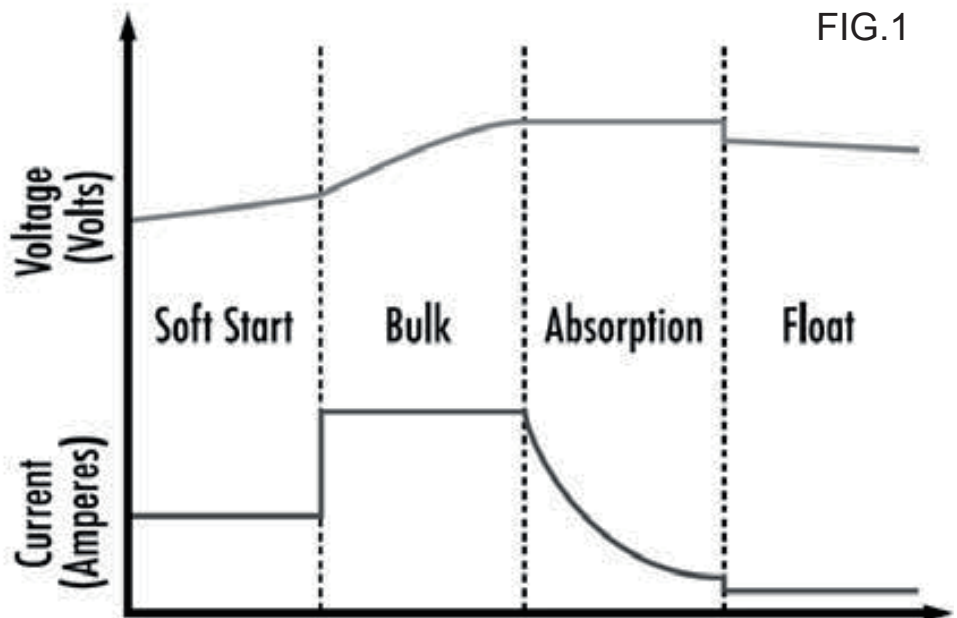
During this stage the battery brought to 75 - 80% of its charge. The charger delivers maximum current until the terminal voltage has risen to the full charge level for Normal battery.

Absorption (Stage 3):

Completes the charge up to virtually 100% at a constant voltage. The current tapers off after the current reached the minimum level.

Float (Stage 4):

Low constant voltage, minimal charge current, battery is fully charged



APPEARANCE AND LCD DIAGRAM

1) Power-down memory function:

in the charging process (constant current and follow-up stage), the product can remember the current charging mode after power outage, and restores the original state when the grid resumes; the maximum time is 12h with battery connection.

In power-down memory state, the Power LED is on, the LCD doesn't display, and the backlight is off;

2) Charging mode:

identify 6V/12V batteries automatically; for 6V batteries, only 6V/1A SLOW mode is available; for 12V batteries, four charging modes are available, as follows:

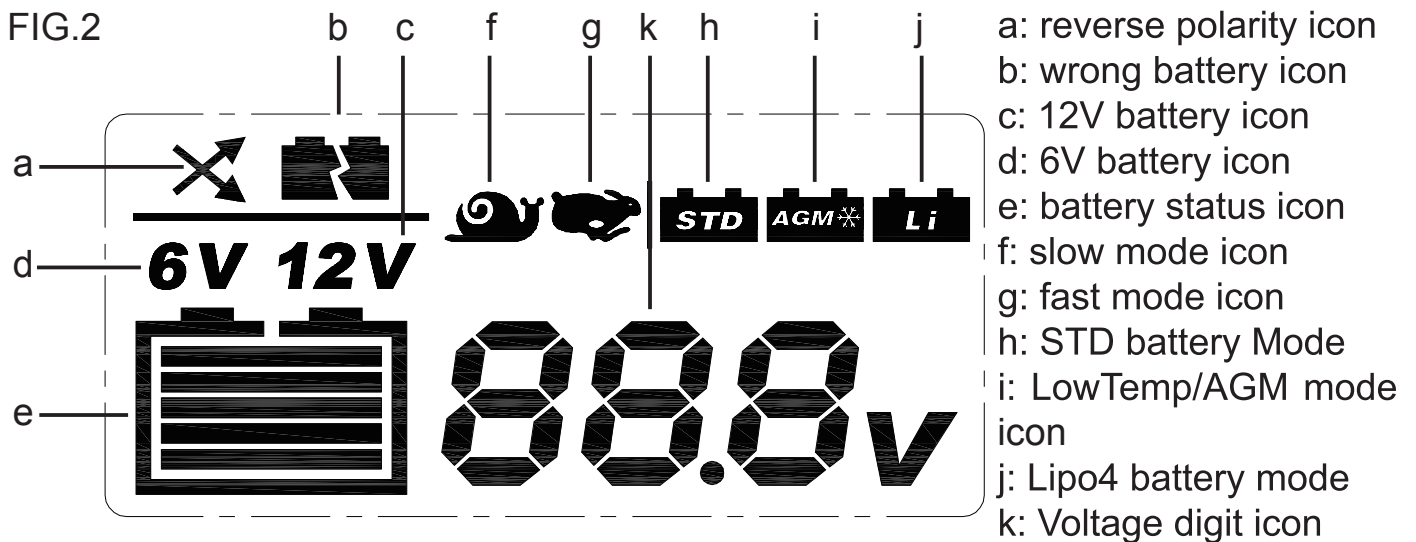
- 6V 1A /SLOW charging mode (default)
- 12V 1A /SLOW charging mode
- 12V 4A /FAST charging mode
- 12V 4A /LOW TEMP/AGM charging mode (**Environment temperature <math><10^{\circ}\text{C}</math>**)
- 12V 4A/Lipo4 charging mode

The minimum voltages for automatic identification of 6V&12V batteries are 3V and 7.4V respectively.

3) Protection:

- Short circuit protection: keep or return to the initialization interface.
- Reverse polarity protection: the LCD displays reverse polarity signal
- Overheating protection

FIG.2



4) LCD display function

The product integrates LCD, as shown in Fig. 2. It displays the analog battery status, charging mode, charging state, real-time voltage, and error message, and integrates LED indicators. The specific LCD states are shown in Fig. 3 below:

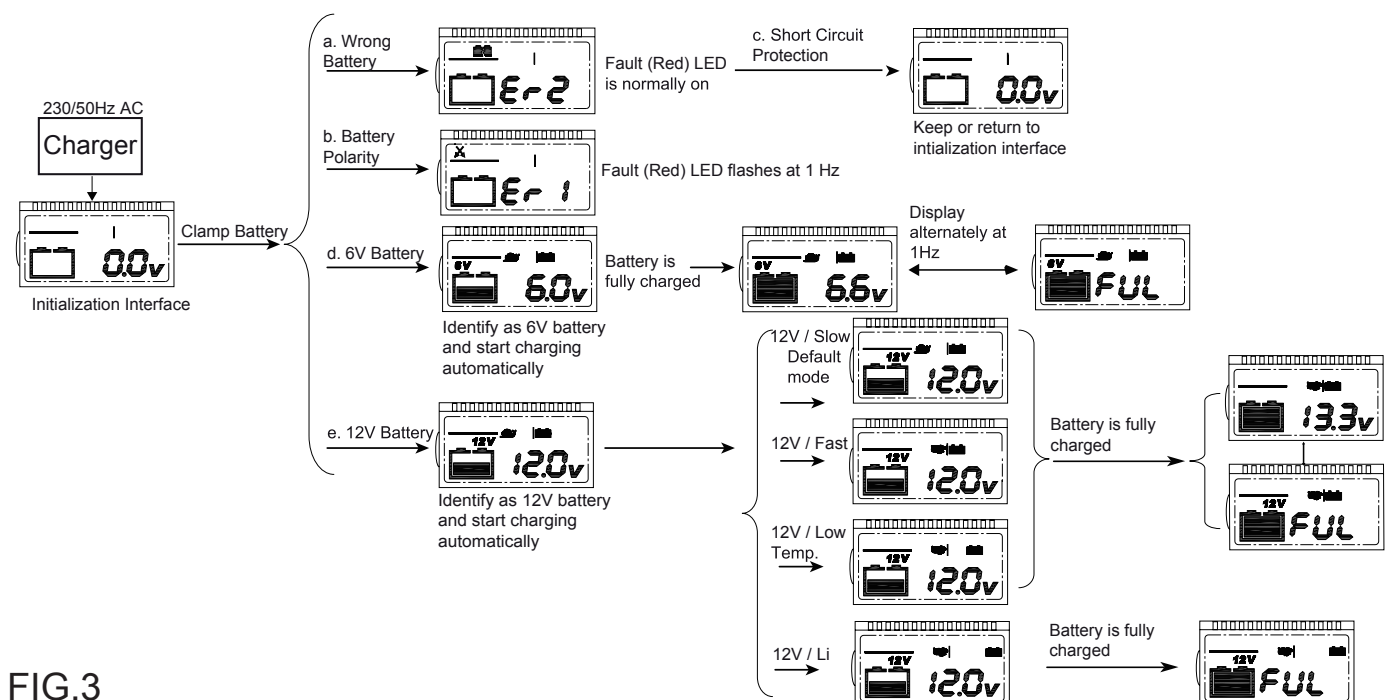


FIG.3

Remark:

i) 6V: When the battery voltage is between 3.5V–5V, the charger will work at 6V/Slow mode. LCD flashes the real time battery voltage at 1Hz frequency and the battery icon scrolls. Press the button to pause/resume the charging process. The battery icon stops scrolling when it is “pause”.

After charging the battery by 2 minutes, if battery voltage is still <4.5V, LCD flash at 1Hz frequency to display “Lo” and “real time voltage” alternately. Red LED light keeps “ON”

ii) 12V: When the battery voltage is between 7.4V and 10V. The charger will work at 12V/ Slow mode. Press the button and change the mode to “Fast”, “Low Temp” or “Pause” the charging process respectively. The battery icon stops scrolling when it is “pause”.

After charger the battery by 2 minutes, if battery voltage is still <9V, LCD flash at 1Hz frequency to display “Lo” and “real time voltage” alternately. Red LED light keeps “ON”

In these 2 cases, please press the button to detect/check the battery status and start the charging process again. Don't need to disconnect the AC power and battery cable clamp.

Keep charging the battery 4 hours (6V mode)/9 hours (12V mode). If the battery voltage is still below the correct level, LCD displays Er3. Red LED light keeps “ON”. In this case, you must to disconnect the battery cable clamp, or need to disconnect the power.

Please refer to Fig. 4 and Fig. 5 , 6V/ 12V LCD charging block diagram.

FIG.4 - 6V LCD charging block diagram:

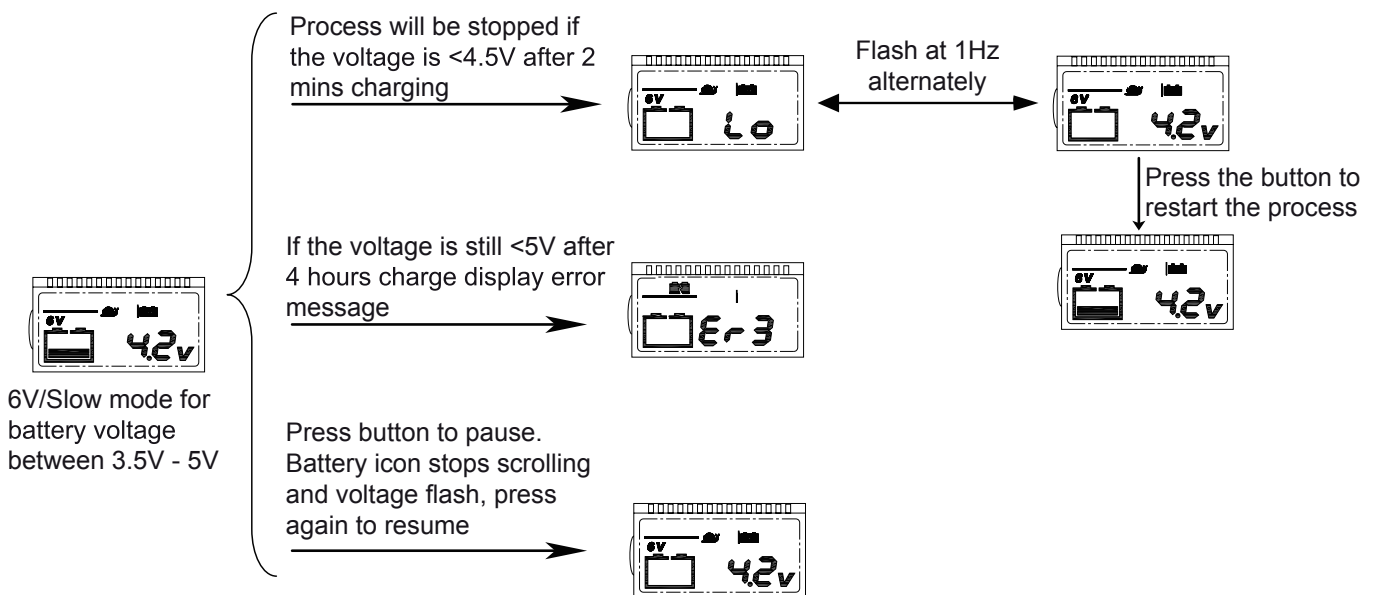
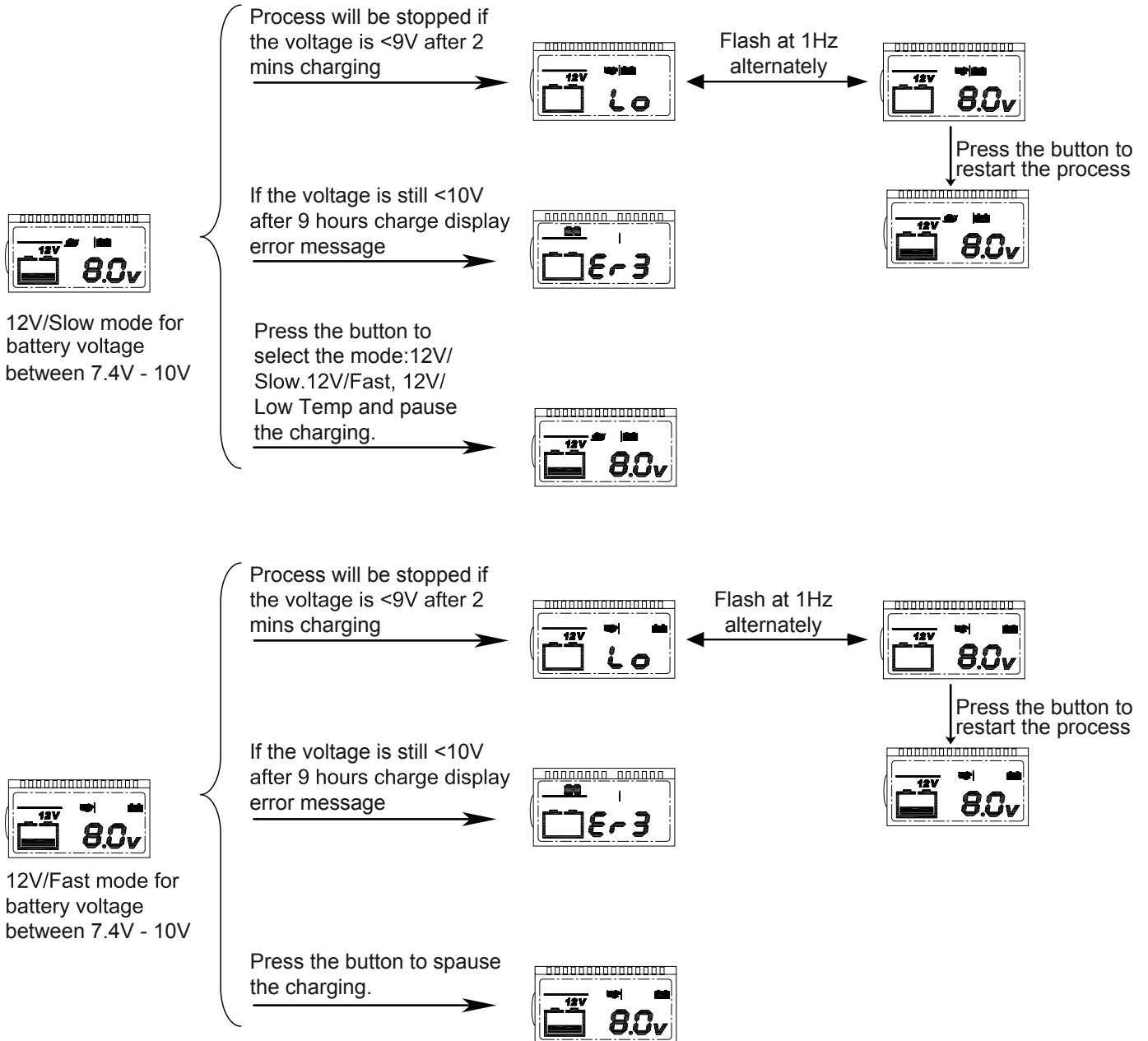


FIG.5 - 12V charging block diagram:



PRECAUTIONS AND OPERATING INSTRUCTIONS

1) Precautions:

- The supply voltage of the product is 220~240VAC; please make sure that the mains voltage meets the specifications of the product before using;
- The charger is suitable for 6V/12V regular and Lead-acid batteries with 5Ah ~ 120Ah capacity;
- Clamp the battery positive pole (+) with the red clip of the output line, and clamp the negative pole (-) with the black clip; it will report error if the polarity is reverse;
- Before charging the battery, in order to prevent the equipment connected to the battery from damage or unnecessary influence, disconnect the battery and the equipment before charging the battery;

2) Operating instructions:

- Connection and reverse polarity: select the battery to be charged, verify the input voltage and then insert the power plug, enter into the initialization interface as follows Fig. 6; clamp the red clip of the output side to the positive (+) of the battery, and

clamp the black clip to the negative (-); if the polarity is reverse, the red (Fault) LED flashes at 1Hz, and LCD displays as shown in Fig. 7

FIG.6

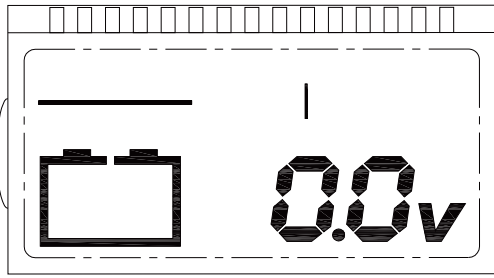
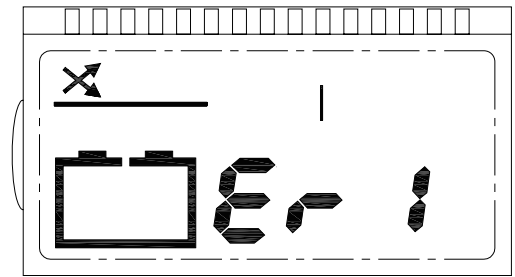
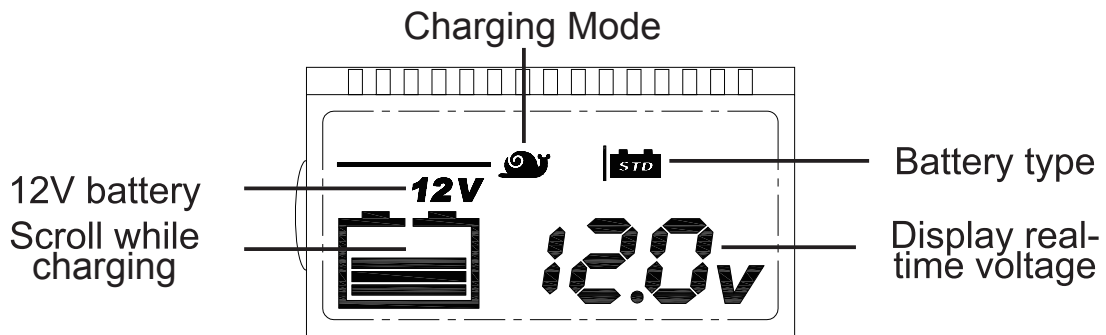


FIG.7



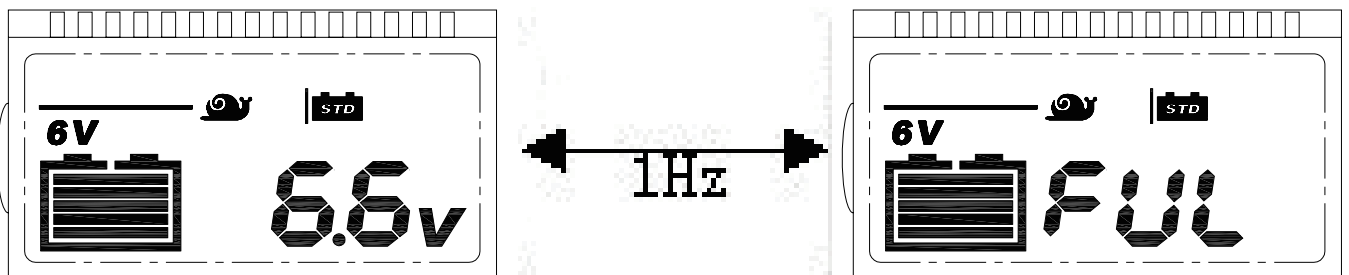
B. Pre-charge, constant current & constant voltage charging: clamp the output terminal to the battery to identify 6V or 12V battery; for 6V battery, it will start charging in 6V/slow mode immediately; for 12V battery, it enters 12V/slow mode by default; you can press the MODE button to switch among the three modes sequentially(Slow/Fast/Low Temp), each time you press the button, the backlight is turned on for 10 seconds; the display effect is shown in Fig. 8;

FIG.8



C. Float charge: enter the float charging state, the battery icon shows full, and the real-time voltage and FUL characters display alternately at 1Hz frequency. In this stage only the backlight will be "ON" when you press the button; no mode selection is possible during the float charge, as shown in Fig. 9 below:

FIG.9



D. Power-down memory: in the charging process, unplug the power plug or in case of power outage, the product will save the original charging mode as long as the battery voltage exceeds 5V; the LCD screen doesn't have display but the "power" LED (Green) will be "ON, the maximum memory time is 12 hours; when the power resumes, it will continue to charge in the original state;

E. Charging completes: unplug the power plug, and then remove the clips from the battery.

MAINTENANCE AND CARE

It is essential to keep your battery regularly charged throughout the year, especially during the winter months. In the winter the effectiveness of your car battery is reduced by the cold. Oil is thick. Engines are difficult to start and the heater, windscreen wipers and lights are all draining power. It is at this time that batteries have to be at peak power. If your battery is not regularly maintained and kept fully charged, it can cause problems and a possible breakdown.

Listed are some helpful hints on how to keep your battery healthy in conjunction with your Battery Charger.

Faulty Cells

Batteries are usually made with six cells. One of these cells can deteriorate or get damaged. If, after several hours charging your battery is still flat, you should test the battery.

ONLY for NOT sealed batteries:

Take hydrometer readings from each cell in the battery. If one reading is lower than the others, this could indicate a faulty cell. If necessary, get an Auto-Electrician to check your battery. One faulty cell is enough to ruin your battery.

It is pointless to continue using it and you would be better getting a new one.

Care

Sometimes the battery may appear flat, but this could simply be dirty or loose connections on your battery terminals. It is important to maintain the leads on a regular basis. Do this by removing the leads from the battery, clean the inside of each connector and terminal posts on the battery, smear the terminal posts and connectors with Vaseline, refit in their correct positions and tighten firmly.

It is essential to keep the electrolyte level above the plates.



Note, however, that you should not overfill it, as the electrolyte is strongly acidic. When topping up do not use tap water. Always use distilled or de-ionized water. It is important to keep the acid level up. If necessary have it checked by your garage.

Checking the condition of your battery (ONLY for NOT sealed batteries)

Using a hydrometer, which can be purchased, from most motor accessory stores, you can check the specific gravity of the electrolyte in each cell. The hydrometer is used to suck up a quantity of fluid from the cell. The weighted float inside the hydrometer will register the condition of that cell. Put the fluid back into the cell after testing, taking care not to splash the fluid about.

This product must not be disposed in domestic waste. This product has to be disposed at an authorized place for recycling of electrical and electronic appliances. By collecting and recycling waste, you help save natural resources and make sure the product is disposed in an environmentally friendly manner.

Error Codes & Solutions:

Problem	Error Codes	Solutions
Reverse polarity protect	Er1 	Check charging clamp, connect the red clamp to positive (+) battery post, and black clamp to negative (-) post
Battery failed	Er2 	Check the battery voltage is for 12V system
Failed in precharge stage	Er3	Battery has problem. Replace with a new battery and try again.

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