MP7403 12/6V 1.5A Maintenance Smart Charger
Instruction and Information Manual

In order to ensure correct and safe usage of your battery charger, you should read these instructions carefully. Please retain these instructions for future reference.

SAFETY

- Ensure that cables are regularly inspected and kept in good condition.
- Never use the battery charger if the mains lead, mains plug, output lead or crocodile clips are damaged.
- Never use the battery charger if it has been dropped or damaged in any way.
- WARNING: Battery charging produces explosive gases. Prevent flames and sparks. Provide adequate ventilation during charging.
- Keep the charging area completely clear of combustible materials.
- For indoor use only, **do not** expose to rain or any other forms of liquid or moisture. The charger must not be used as a continuous DC power source or for any purposes other than those listed.
- The charger is designed to charge Lead-Acid & AGM batteries only and must not be used for the charging of non-rechargeable batteries. Never attempt to charge a frozen battery.
- There are no user-serviceable parts in this product other than the fuse in the mains plug. Opening the case is dangerous and electrical repairs or replacement of the mains cable should only be carried out by the manufacturer, its service agent or a suitably qualified electrician / electrical technician in order to avoid a hazard. Resultant damage to the product will result in the loss of your guarantee.

GENERAL SAFETY

This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children must be supervised to ensure that they do not play with the appliance. Cleaning and user maintenance must not be undertaken by children without supervision.

Gases: The charging process produces flammable and explosive gases - the area in which charging takes place should be kept well ventilated. Only connect and disconnect the battery leads when the mains supply is disconnected. Avoid flames or sparks! Do not smoke!

Cables: Make sure mains lead is located so that it will not be stepped on, tripped over, or otherwise subjected to damage. An extension cord should not be used unless absolutely necessary. Improper use of an extension cord could result in a risk of fire and electric shock. If an extension cord must be used, make sure it is in good electrical condition.

Short circuit: Batteries store large amounts of energy. Avoid short circuits which could result in a dangerous electrical discharge that could result in personal injury and / or damage to equipment and property. Take extra care when using tools around a battery, remove personal metal items such as rings, bracelets, necklaces, and watches when working with a lead-acid battery as a short circuit may result in severe burns or cause an explosion.

Personal protection: The use of safety goggles, clothing protection and gloves when working with lead acid batteries is strongly advised. Avoid contact with the electrolyte as this is acidic and is likely to cause burns to the skin or clothes. If this occurs you should rinse the affected area with plenty of running cold water immediately. In the event of burns to the eyes, medical advice should be sought immediately or if symptoms persist as a result of burns to the skin.

GENERAL INFORMATION

Only use this product for the purposes described in this instruction booklet. Failure to do so will result in the loss of your guarantee. The manufacturer will not accept liability for damage to the charger, persons or property resulting from incorrect usage or failing to follow the instructions in this booklet.

DISPOSAL

In the event that this product must be disposed of, an authorised place for the recycling of electrical and electronic appliances must be sought. Contact your local authority for information concerning local Household Recycling Centres with applicable facilities.

This product must not be disposed of with general domestic waste.

SCOPE OF USE

This product is only to be used for charging 6V or 12V lead-acid, sealed lead-acid, maintenance-free and AGM vehicle & leisure batteries of capacities 1.2Ah to 120Ah (Ampere hours). Consult the manufacturer of your device, battery or vehicle if you are unsure about the suitability of this charger for use with it.

FEATURES:

High frequency power supply with **Micro Processor Control Unit**
Voltage selection switch - 1.5A–6V or 1.5A–12V
Power Indicator LED
Charging Indicator LED
Charged Indicator LED
Error Indicator LED

Protection Features:

Short circuits, open circuits, sparking, over-heating, current overloads & over-charging.

OPERATING INSTRUCTIONS

Before using review all safety and connection directions before using charger. Failure to do so can damage battery and cause serious injury or death.

Please read your vehicle manufacturer's instructions for further information and advice regarding charging and the disconnection of the battery for charging purposes.

IMPORTANT: This charger will only recover batteries with a minimum residual voltage of 1.5V. If the residual voltage is lower than above figure, the charger will not operate. **NOTE:** This charger operates automatically and will change operating status without warning.

PREPARATION OF THE BATTERY

Check the voltage and capacity of the battery to be charged. In the case of lead-acid batteries, firstly remove the caps from each cell and check the level of liquid. If it is below the recommended level, top up with deionized or distilled water. **UNDER NO CIRCUMSTANCES SHOULD TAP WATER BE USED.**

To avoid battery acid splashing, the cell caps should be replaced but not tightened until charging is complete. This allows any gases formed during charging to escape. It is inevitable that some minor escape of acid will occur during charging. If your battery is permanently sealed it is unnecessary to carry out these checks.

1. LOCATION & CONNECTION

Maintain as much distance as is practical between the battery and charger. Some slack in the input and output leads must be maintained. Position the charger on a level, stable surface, completely free of combustible materials. Never place the charger directly above the battery being charged; gases from battery will corrode and damage the charger. **Ensure the charger leads cannot be damaged by the vehicle bodywork, sharp objects, or moving engine parts.**

To avoid sparks which could cause an explosion, the mains supply should always be disconnected before making or breaking battery connections.

Connect the battery clips to the battery in the following order:

- Connect the positive charging lead (RED) to the positive post of the battery (marked **+, +ve** or **P**).
- For negative-earth vehicles with the battery still installed: Connect the negative charging lead (BLACK) to the vehicle chassis, well away from the battery, fuel line, and hot or moving parts
- For batteries removed from the vehicle**:** Connect the negative charging lead (BLACK) to the negative post of the battery (marked ─, ─ve or N).

After connecting the clips, rotate them slightly to remove any dirt or oxidization, thus ensuring a good contact.

2. **CHARGING**

WARNING! DO NOT ATTEMPT TO START THE VEHICLE WITH THE CHARGER CONNECTED TO THE BATTERY. THIS MAY DAMAGE YOUR BATTERY CHARGER.

Note: If the “ERROR” LED indicator illuminates please refer to the charging function table. Charging will not begin while the “ERROR” LED is illuminated. In this event, switch off the mains power supply and rectify the problem before switching on the mains power supply again.

a. Connect to or switch on the mains power supply. The “POWER” LED indicator will illuminate.
b. Select the appropriate charger voltage for your battery.
c. When the charging cycle begins, the “CHARGING” LED indicator will be illuminated. The charger will now automatically measure the voltage of your battery and diagnose its condition. Providing the battery is in an acceptable condition the 9 step automatic charging cycle will now commence.

The 9 step automatic charging program includes:

- Battery condition diagnosis
- Battery preparation with soft start
- Automatic current selection & bulk charging - charging with constant current
- Constant voltage absorption charging
- Resting and condition monitoring period
- Maintenance float charging - When the battery is fully charged the charger will maintain the condition of your battery automatically through voltage monitoring and pulse charging.

WARNING

It is recommended that charging should be supervised at all times. Monitor the temperature of the battery during charging. If the temperature of the battery exceeds 40^0C cease charging until the battery has cooled to a safe temperature. Failure to do so may result in the battery exploding.

3. WHEN CHARGING IS COMPLETE

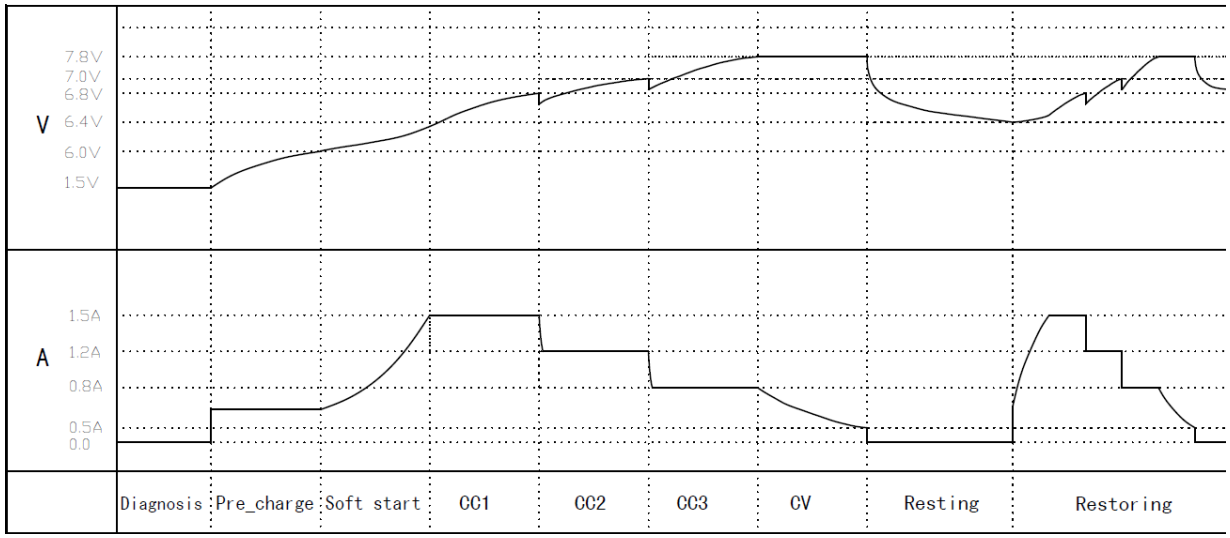
The “CHARGED” LED indicator will illuminate and the charger will continue to monitor & maintain the battery.

4. DISCONNECTING THE CHARGER

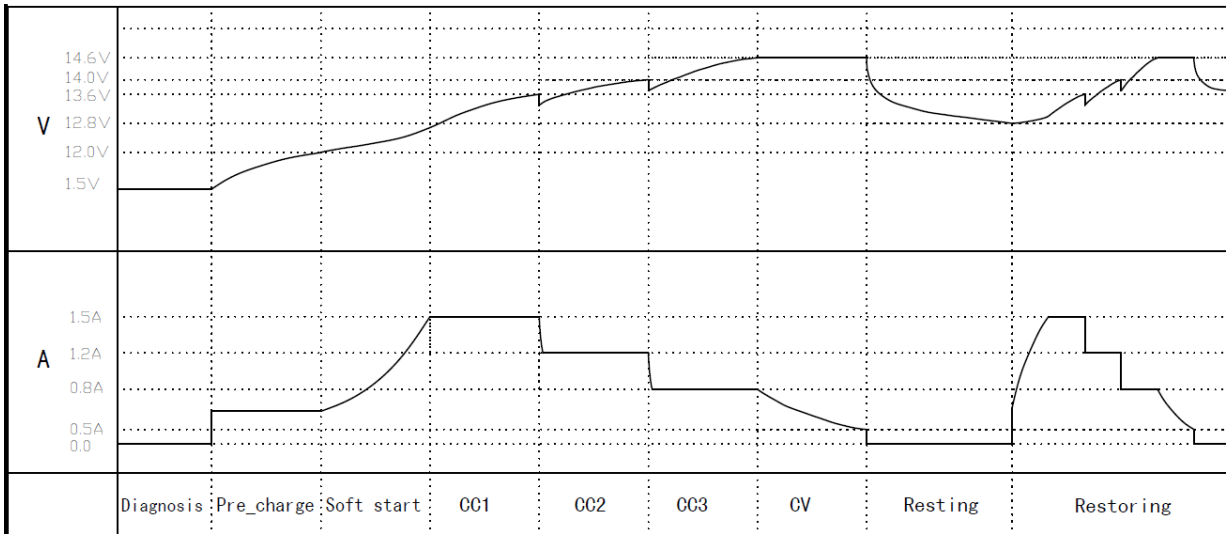
Switch off the mains supply, unplug the charger from the mains (To reduce risk of damage to the mains cable, pull by the plug rather than cable) & disconnect the clips from the battery, negative lead (BLACK) first. Then disconnect the positive lead (RED) from the battery.

For non-sealed lead-acid batteries: Inspect the liquid levels in each cell and top up if necessary, using the correct fluid. Now push home or tighten the caps. Any surplus fluid around the cell tops should be wiped off (this should be done with extreme care as it is acidic). If the battery has been removed for charging, replace it and re-connect the cables according to the manufacturer’s instructions.

Charging Curve 6 Volt



Charging Curve 12 Volt



Charging Function Table

No.	Program	Technical requirement	Remark
1	Mains Power Check	‘‘POWER’’ LED will be on when charger is connected to power source. If clamps are not connected, reverse polarity or short circuit the ”ERROR” LED will be illuminated.	230VAC 50Hz
2	Incorrect connection “ERROR” indicator LED will be on.	Incorrect charge voltage selection	Switch off charger, select the correct charging voltage for the battery and switch on again.
		Bad Battery - voltage is less than 1.5V	Have battery tested by a qualified technician
		Over Voltage - Greater than 7.5V (6V mode) or 15V (12V mode)	Check the charging mode or battery specification
		Poor Connection - If the battery terminals are corroded or the clips are not making a good connection.	Switch off the charger and check the battery clips; remove dirt or corrosion as necessary and connect correctly.
		Reversed - battery connection, leads are reversed	Switch off the charger and connect the leads correctly
		Charging a very cold battery	Charge rates will be very low. Never attempt to charge a frozen battery.
3	Battery Condition Test	**Charging a 6V battery:** If the voltage does not reach 5.5V±0.2V after 4 mins charging. Or falls below 6V within 2mins after fully charged Then battery will be determined as bad battery and “ERROR” LED will be illuminated.	Have the battery tested by a qualified technician. Replace the bad battery if necessary.
		Charging a 12V battery: If the voltage does not reach 11V±0.2 after 4 mins charging. Or falls below 12V within 2mins after fully charged Then battery will be determined as bad battery and “ERROR” LED will be illuminated.	

4	Constant - Current charging	Battery voltage	< 6V	6V-6.8V	6.8V-7V	>7V	Tolerance Voltage ±0.3V Current ±0.3A
		6V mode Current	0.6A	1.5A	1.5A	<0.6A	
		Battery voltage	< 12V	12V—13.6V	13.6V—14V	>14V	
		12V mode Current	0.6A	1.5A	1.5A	<0.6A	
5	Fully Charged	6V mode- Battery is fully charged when voltage > 7.2V & current < 0.5A. “CHARGING” LED will be off while “CHARGED” LED on.					
		12V mode- Battery is fully charged when voltage >14.6V & current <0.5A. “CHARGING” LED will be off while “CHARGED” LED on.					
7	Maintenance charge mode	6V mode- 2mins after fully charged, if voltage falls to 6.4V, unit will recharge with “CHARGING” LED on and “FULL CHARGE” LED off.					
		12V mode- 2mins after fully charged, if voltage falls to 12.8V, unit will recharge with “CHARGING” LED on and “FULL CHARGE” LED off.					
8	Max charging time	If battery is still not fully charged after 86 hours, it will be identified as bad battery. The charger will stop charging with “ERROR” LED flashing.					

CAR BATTERY MAINTENANCE

It is essential to keep your battery regularly charged up 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.

TECHNICAL SPECIFICATIONS

Protection class	Rated input voltage	Rated input current	Rated output current	Min - Max lead-acid battery capacity
IP65	230V 50Hz	0.35A	6V-12V : 1.5A	1.2 - 120Ah

MAINTENANCE INSTRUCTIONS

This charger requires minimal maintenance. As with any appliance or tool, a few common sense rules will prolong the life of this battery charger.

ALWAYS BE SURE THE CHARGER IS UNPLUGGED BEFORE PERFORMING ANY MAINTENANCE OR CLEANING.

1. Store in a clean, dry place to avoid moisture damage
2. Loosely coil up the cords when not in use.
3. Clean the case and cords with a slightly damp cloth.
4. Clean any corrosion from the clamps with a solution of water and baking soda.
5. Examine the cords periodically for cracking or other damage and have them replaced if necessary.
6. WARNING: All other service should be done by qualified personnel only.

DECLARATION OF CONFORMITY

We declare that this product conforms to the following standards EN60335-1, EN60335-2-29, EN55014, EN61000, and the following Directives 73/23 CEE, 93/68 CEE, 2004/108/EC, 2002/95/EC (ROHS)

Technical Manager

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September, 2016

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