



BATTERY CHARGER INSTRUCTION MANUAL

Model: **MW-SC4B**

Please save these instructions. These instructions contain important safety and operating instructions. Read all instructions and follow them with each use of this product.

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Figure 1: Product overview

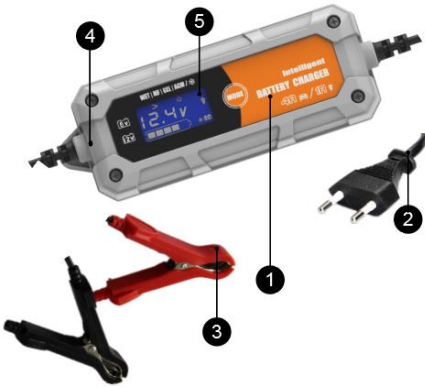
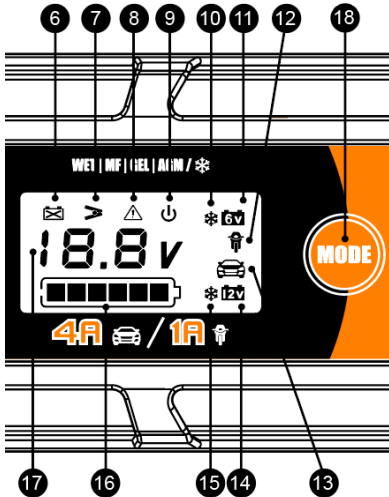


Figure 2: Product overview



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
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Introduction



The instructions contain important information concerning safety, use and disposal. Before using the product, please carefully study with all of the safety information and the operating instructions. The instructions should be kept in a safe place and submitted together with the product in the event of passing the product on to anyone else

Intended use

The product is a 10-stage car battery charger that is suitable for charging and trickle charging up of 6V or 12V lead-acid battery (batteries) with liquid electrolyte(WET), Maintenance-free lead-acid batteries(MF), gel electrolyte(GEL) or electrolyte absorbent mats(AGM).



The product is not intended for commercial use and is for indoor use only.











The manufacturer cannot accept any liability for damage arising from improper use.

Scope of delivery

- 1 Car battery charger
- 1 Operating instructions

List of parts

- 1 Charger
- 2 Power cord with mains connector
- 3 Charging cable with red & black clamps
- 4 Mounting holes
- 5 LCD display
- 6 Defective battery error symbol
- 7 Clamp-related error symbol
- 8 Special error symbol
- 9 Standby symbol

- 10+11 6V charging mode in cold state, also for many 6V AGM battery  
- 11 6V charging mode 
- 12 1A charging mode 
- 13 4A charging mode 
- 14 12V charging mode 
- 14+15 12V charging mode in cold state, also for many 12V AGM battery  
- 16 Battery charge status display 
- 17 Battery voltage display 
- 18 Mode selection button

Technical data

Primary

Rated Input Voltage 220 - 240VAC, 50Hz
Input Power 70W MAX

Secondary

Rated Output Voltage 6VDC
12VDC
Charging Voltage 7.2/7.4VDC ± 0.25 VDC
14.4/14.7VDC ± 0.25 VDC
Rated Output Current 6V: 1 A $\pm 10\%$
12V: 1A / 4A $\pm 10\%$
Charger Type 10-Stage, Fully Automatic
Battery Type 6V & 12V Lead-Acid
(Wet, MF, GEL, AGM)
Battery Capacity 6V: 1.2 - 14Ah
12V: 1.2 - 120Ah
Ambient Temperature -10 to +40°C
Housing Protection IP65

Protection class

Class II



Safety

Safety instructions

- For indoor use only.
- Do not recharge the non-rechargeable batteries.
- Please check prior use if output voltage and current of the battery charger is suitable for the charging battery.

- Do not use the battery charger in the circumstances that the output polarity does not match the load polarity.
- If the supply cord is damaged, it must be replaced by the manufacturer or its service agent or a similar qualified person in order to avoid a hazard.
- The cover may under no circumstances be opened. If the cover is damaged, then battery charger may no longer be used.
- Disconnect supply mains before connecting or disconnecting the battery.
- This product can be used by children aged from 8 years and above and persons with reduced physical, sensory or mental capabilities or lack of experience and knowledge if they have been given supervision or instruction concerning use of the product in a safe way and understand the hazards involved.
- Children shall not play with the product.
- Cleaning and user maintenance shall not be made by children without supervision.
- Do not use the battery charger as jump start.
- Warning: Explosive gases. Prevent flames and sparks. Provide adequate ventilation during charging.
- Provide adequate ventilation during charging.
- The battery terminal not connected to the chassis has to be connected first. The other connection is to be made to the chassis, remote from the battery and fuel line. The battery charger is then to be connected to supply mains.
- After using, disconnect the battery charger from supply mains. Then remove the chassis connection and the battery connection in this order.

Product description

This product is designed for charging open as well as a wide range of closed lead acid batteries used for passenger cars, motorcycles and certain other vehicles, e. g. WET batteries (with liquid electrolyte), GEL batteries (with electrolyte in gel form) or AGM (absorbent glass mat) batteries.

The battery capacity ranges from 6V/1.2Ah to 6V/14Ah or from 12V/1.2Ah to 12V/140Ah.

The special design permits re-charging up to virtually 100% of the battery capacity. Furthermore, a long-term connection of the battery to the charging station can take place to keep the battery in optimal condition when not in use, without it being damaged in the process.

The charger features a total of 6 charging modes for different batteries in various states. This makes charging more efficient and reliable.

In addition, the battery charger is controlled by an internal MCU (micro-computer unit). After selecting the desired charging mode the charger will recognize the battery connected (voltage, condition) and compute the necessary charging parameters (charging voltage, charging current). This allows for efficient and safe charge. When selecting a charging mode not suitable for the battery or if the battery is defective, the charging will not start. The charger switches to error indicator.

Operation

Before use

- Read the battery operating instructions before connecting up the charger.
- Observe the vehicle manufacturer's recommendation if the battery is still connected to the vehicle.
- Clean the battery poles. Take care that while doing so, your eyes do not come into contact with the dirt.
- Ensure sufficient ventilation. Hydrogen gas (electrolytic gas) may escape from the battery during charging and trickle charging.


Connection


- Connect the positive pole clamp (red) of the charger to the positive pole of the battery.
- Connect the negative pole clamp (black) to

the negative pole of the battery or to the car body. However well away from fuel pipes.


- If connection is right and the battery is 8V above, battery voltage is correctly shown on the LCD. LCD display's back light is on as well.

NOTE: If the battery voltage is 8V below, the voltage on the LCD is NOT correct or nothing on the LCD.

NOTE: If the battery is 16V above, the error symbol  is shown on the LCD and LCD display's back light flashes, which means the charger is NOT suitable for the battery.

- Connect the mains cable of the charger to the mains socket.
- If connection is right, battery voltage and standby symbol  is shown on the LCD.



- Make sure error symbol  are not shown on the LCD. If shown, check the connection of the battery.
















NOTE: During normal operation, the display's back light will turn off for saving energy after no action for 1 minute. To turn on the back light, press the mode selection button ONLY ONCE.

Disconnection

- Always disconnect the charger from the supply mains.
- Remove the negative pole clamp (black) from the negative pole of the battery or from the bodywork.
- Remove the positive pole clamp (red) from the positive pole of the battery.



Mode Selection

- Select the required mode by pressing the mode selection button.
- The following 6 modes are available.

Mode		Max Voltage	Max Current
1	 	7.2V	1A
2	  	7.4V	1A
3	 	14.4V	1A
4	  	14.7V	1A
5	 	14.4V	4A
6	  	14.7V	4A

Mode 1 - 6V (7.2V/1A)

Suitable for 6V batteries with a capacity between 1.2Ah and 14Ah in normal state. Charging mode for WET, MF batteries and most GEL batteries.




- Press the mode selection button to select mode 1. The symbol   is shown on the LCD. If no further action is taken, charging will automatically start after 3 seconds. During charging, the charge status display shows the progress of the charge procedure (1 - 6 bars). When the battery is fully charged, the charge status display shows 6 bars.

NOTE: When the charging starts, the standby symbol will not be shown on the LCD.

NOTE: During charging, press the mode selection button to stop the charge and re-select the mode.

Mode 2 - 6V (7.4V/1A)

Suitable for 6V batteries with a capacity between 1.2Ah and 14Ah in cold conditions. This charging mode is also designed for many AGM batteries.



- Press the mode selection button to select mode 2. The symbol    is shown on the LCD. If no further action is

taken, charging will automatically start after 3 seconds. During charging, the charge status display shows the progress of the charge procedure (1 - 6 bars). When the battery is fully charged, the charge status display shows 6 bars.

Mode 3 - 12V (14.4V/1A)



Suitable for 12V batteries with a capacity between 1.2Ah and 14Ah in normal state.

Charging mode for WET, MF batteries and most GEL batteries.

- Press the mode selection button to select mode 3. The symbol   is shown on the LCD. If no further action is taken, then charging will automatically start after 3 seconds. During charging, the charge status display shows the progress of the charge procedure (1 - 6 bars). When the battery is fully charged, the charge status display shows 6 bars.

Mode 4 - 12V * (14.7V/1A)



Suitable for 12V batteries with a capacity between 1.2Ah and 14Ah in cold state. This charging mode is also designed for many AGM batteries.

- Press the mode selection button to select mode 4. The symbol *   is shown on the LCD. If no further action is taken, then charging will automatically start after 3 seconds. During charging, the charge status display shows the progress of the charge procedure (1 - 6 bars). When the battery is fully charged, the charge status display shows 6 bars.

Mode 5 - 12V (14.4V/4A)



Suitable for 12V batteries with a capacity between 14Ah and 120Ah in normal state.

Charging mode for WET, MF batteries and most GEL batteries.

- Press the mode selection button to select mode 5. The symbol   is shown on the LCD. If no further action is taken, then charging will automatically start after 3 seconds. During charging, the charge status display shows the progress of the charge procedure (1 - 6 bars). When the battery is fully charged, the charge status display shows 6 bars.

Mode 6 - 12V * (14.7V/4A)

Suitable for 12V batteries with a capacity between 14Ah and 120Ah in cold state. This charging mode is also designed for many AGM batteries.

- Press the mode selection button to select mode 6. The symbol *   is shown on the LCD. If no further action is taken, then charging will automatically start after 3 seconds. During charging, the charge status display shows the progress of the charge procedure (1 - 6 bars). When the battery is fully charged, the charge status display shows 6 bars.

Mode memory function

The microprocessor inside the charger has mode memory function, which means the unit can first enter into the mode the users set last time. This function can erase the users' worry about forgetting the setting for their own batteries and shorten the setting time for the users' convenience.

The unit also can restart the charge after restoration of power supply.

10-stage automatic charge

The charger uses a proprietary 10-stage charging process designed to optimally charge and maintain batteries.

Stage 1: Initialization

Checks the battery's condition to determine the charge process. If the battery is deeply discharged, it will enter into the pulse charge to refresh the battery.

Stage 2: Gentle Charge

Starts the charging process with 1/2 value of current you select if the battery is below 6V for 6V modes or 12V for 12V modes, which can warm up the batteries and avoid the battery suddenly bulk charged. For 1A mode, the gentle charge rate is 1A.

Stage 3 - 6: Constant Current (CC) Charge

Returns 85% of the battery capacity by charging at 4 different output rates, which can charge the battery more full. For 1A mode, the CC charge's output rate will keep 1A ONLY.

Stage 7: Constant Voltage (CV) Charge

Brings the charge level to 95% at max charge voltage by gradually decreasing the current, which limits battery gassing and prolong battery life.

Stage 8: Float Charge

Finalizes the charging process and brings the battery to maximum capacity at float charge voltage. For 6V mode, there is no float charge.

Stage 9: Analysis

It will cut off the output and analyze whether the battery can hold the capacity. It may enter into the regeneration mode to deeply recover the battery.

Stage 10: Maintenance

Monitors battery condition. If battery voltage falls below its threshold, the charger restarts the charge, which effectively & efficiently ensures the battery at full charge and without the risk of overcharge.

Pulse charge

This is an automatic charge function which cannot be selected manually. If the battery voltage is below 5.3V for 6V modes or 10.5V for 12V modes, the unit changes over to pulse

charge. This pulse charge will finish after the battery is above 5.3V for 6V modes or 10.5V for 12V modes. Meanwhile the max time for pulse charge is 30 minutes, and enters into normal charge.

This process is able to refresh most flat, used or overcharged batteries so that they can be re-used.

NOTE: The battery is recognized to be defective if the voltage is still below 4.5V for 6V modes or 9V for 12V modes after pulse charge and plus 30-minute gentle charge. Have the battery checked by a speciality repair shop.

Regeneration mode


This is an automatic function which cannot be selected manually. If the battery voltage falls below 6V for 6V modes or 12V for 12V modes in 3 minutes after fully charged, the unit changes over to regeneration mode.



This regeneration mode continues up to 2 hours. This process will recover battery capacity by applying a specialized high voltage (8V for 6V modes or 16V for 12V modes) to soften down sulfate from the battery plates.

NOTE: The battery is recognized to be defective if the voltage still falls below 6V for 6V modes or 12V for 12V modes in 3 minutes after the regeneration mode. Have the battery checked by a speciality repair shop.

Protection function

The charger switches the electronics off, as soon as there is an abnormal situation:


- If the voltage between clamps is below 0.5V (including the reverse polarity, short circuit and open circuit) or battery voltage is above 16V for 12V modes or above 8V for 6V modes, the symbol  is shown in the LCD.
- If the battery is recognized to be defective,

- the symbol  is shown on the LCD.
- If maximum charge time has been exceeded, the symbol  is shown on the LCD.

NOTE: When the above errors occur on the LCD, the LCD display's back light flashes.

Overheat protection

The charger is designed to decrease the charging current and even shut itself off if overheating is detected. Once the charger cools down, it will resume normal charging automatically.

NOTE: When output current is cut for temperature inside the unit is too high, the error symbol  is shown on the LCD and the display's back light flashes.

Maintenance and care

- The product may be stored not in damp environment or in places with corrosive gases, but at a dry place outside of the range of children.
- Cleaning the surface of the product and wipes it off only with a dry cloth.
- The product may not be dismantled. If the product is damaged, contact the supplier or manufacturer.
- Maintenance and servicing are not required under normal conditions.

Disposal



The packaging is made from environmentally friendly material and can be disposed of at your local recycling plant.



Do not dispose of this product in your normal

domestic waste!

European Directive 2012/19/EU requires that worn-out products are collected separately and fed into an environmentally compatible recycling process.

Your local community or municipal authorities can provide information on how to dispose of the worn-out products.