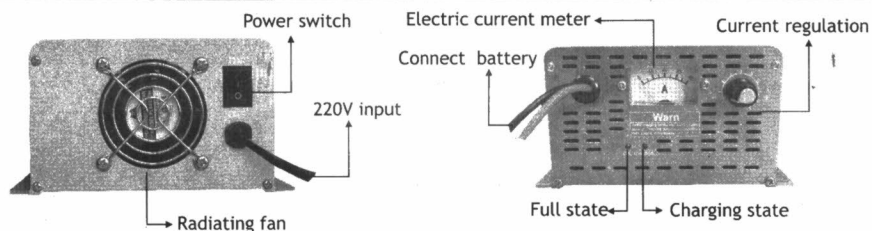


## Charge operate

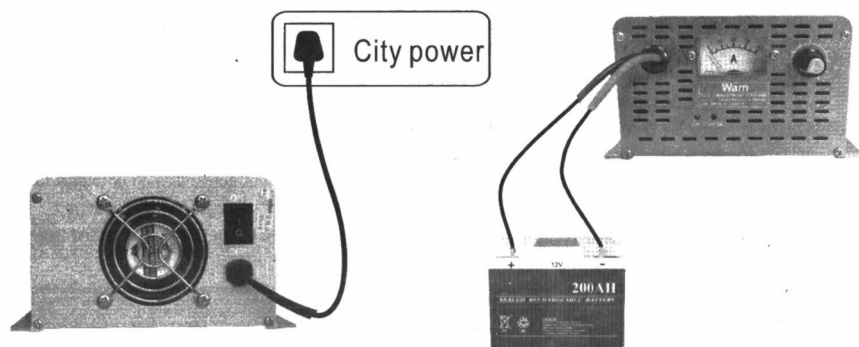
1. Check the battery rated voltage whether match the charger output voltage or not
2. Connect the charger and the battery as the right request
3. Check the city power voltage whether match the charger rated input voltage or not
4. Connect the city power, then check the indicator turn on or not, the fan work or not.
5. If the indicator light off, please turn off the city power at once, and check city power and storage battery and all the line
6. After charge the battery fully, please turn off the city power first, then turn off the battery connect wire

## Installation and use method

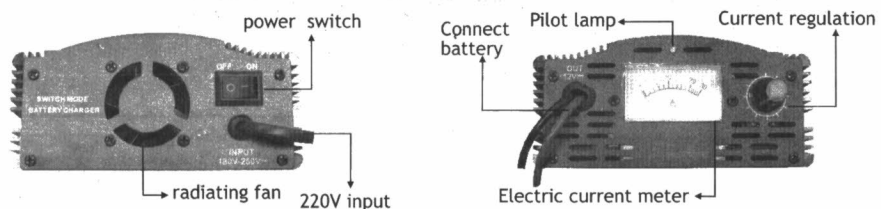
### Side panel introduction



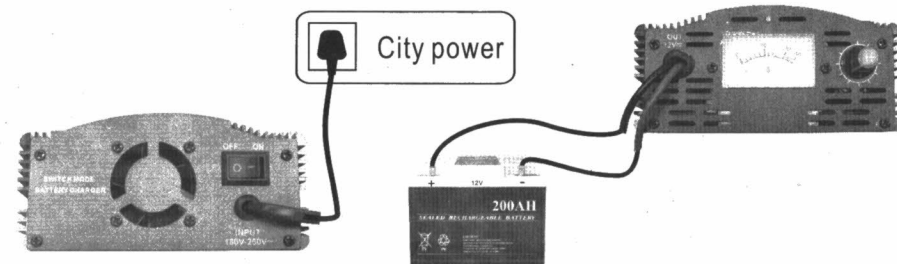
### Connect way



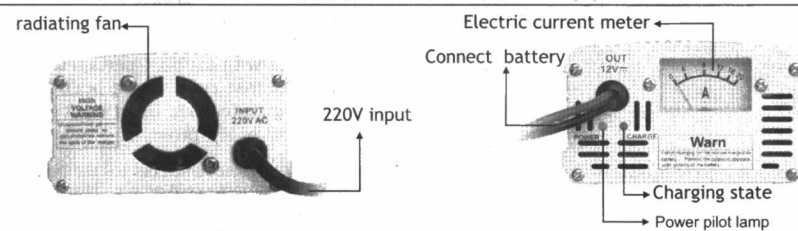
### Side panel introduction



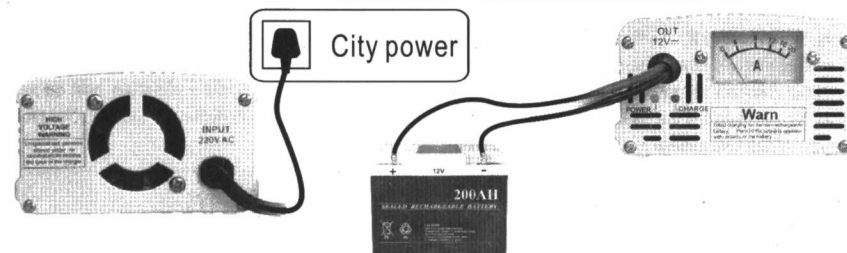
## Connect way



### Side panel introduction



### Connect way



## Technical parameter

Charge current	input voltage	Rated voltage	Constant charge current	Constant charge voltage	floating voltage	charge mode
10A	AC220V ± 10% 50Hz	12V	10A ± 5%	14.5—14.8V	13.8V	Three-step
20A	AC220V ± 10% 50Hz	12V	20A ± 5%	14.5—14.8V	13.8V	Three-step
30A	AC220V ± 10% 50Hz	12V	30A ± 5%	14.5—14.8V	13.8V	Four-step
40A	AC220V ± 10% 50Hz	12V	40A ± 5%	14.5—14.8V	14.7V	Four-step
50A	AC220V ± 10% 50Hz	12V	50A ± 5%	14.5—14.8V	14.7V	Four-step

Eg.: 12V/20A charger is applicable for the lead-acid battery from 12V/130AH to 12V/400AH;  
 12V/10A charger is applicable for the lead-acid battery from 12V/75AH to 24V/200AH;  
 24V/10A charger is applicable for the lead-acid battery from 24V/75AH to 24V/200AH;  
 48V/5A charger is applicable for the lead-acid battery from 48V/30AH to 48V/100AH.  
 Charging current = battery capacitor(AH)/10.

# BATTERY CHARGER MANUAL

Manufacturer: Foshan Suoer Electronic Industry Co., Ltd

Add: The second village road of ShiShan YanFeng avenue  
Foshan Nanhai district, Guangdong province.

Http://www.chinasuoer.com Q/SE 013-2011

(tel): 400-8837-603

MADE IN CHINA



Facebook  
Fan Page

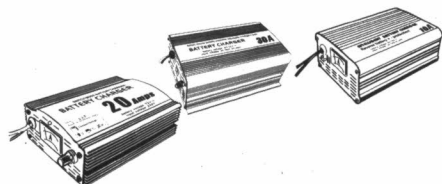


Suoer Wechat  
Account

Model:

MA-1210A/E  
MA-1220A/E  
MA-1230A/E  
MA-1240A/E  
MA-1250A/E

In order to ensure reliable service for you, charger must install and use properly. Before install and use, please read the installation and operating instructions. Special attention should be warned of this manual and warning notices. Some conditions of use and practices may possibly lead to inverter damaged we advise you with caution. certain use conditions and practices that could cause bodily injury, as a clear warning statement. Before using the charger please read all of the prompts.



Please read this manual in order to achieve the right to use. Particularly in the use, please remember to read "Safety Precautions" section, to ensure safe use. After reading the instruction manual, please together with warranty card proper care, to be retained for future reference.

## The brief instruction

The MA series lead-acid battery charger is professional designed according to the power battery of electric vehicles equipment. It uses the advanced soft switch technology, with small size, convenient installation, high conversion efficiency, running fully loaded for a long time, stable output current, large capacity, high reliability, long life features etc. With short-circuited protect, low-voltage protect, overheated protect function. The long delay digital counter can ensure the battery from the constant voltage to the float charge reliably every time. Avoid the lost control of battery heat caused by the high temperature. Let the damage of battery drop to the lowest caused by the dehydration and the polar plate vulcanize which are the two general problems of charger. MAD

## The brief instruction

Rated input voltage: AC 220V ~ ±15%

Rated frequency: 47-63HZ

Output voltage: as the product specifications

Output current: as the product specifications

Power factor: ≥0.85

full load efficiency: ≥87%

Mechanical shock and quake-proof degree:

Agree with the SAEJ1378 requirements. Temperature range: -40~+105℃

## Operating mode of three-step charger

**Constant current mode:** When the voltage of the battery is lower than the value set by the charger, the charger will work under the constant current mode and supply the constant current for the battery.

**Constant voltage mode:** Using the pulse width modulation(PWM) tech to control the charging current and output voltage of the charger which ensure the battery is charged fully and avoid over charged.

**Floating charge mode:** When the voltage of the battery is closing the value of the constant voltage mode, and the current cut down to the given current gradually, that means the battery power is full, then the pilot lamp will turn green and the fan will stop working. The charger will turn the mode into floating charge mode automatically. At this moment, the battery can be stopped charge or kept on floating charge.

## Operating mode of four-step charger

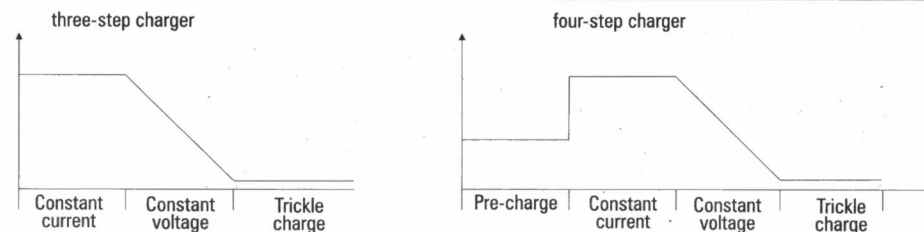
**Pre-charge mode:** In order to protect the battery and extend its life, the battery's internal resistance is too large or voltage is too low because the discharged time is too long or it is not used for a long time, the charger will supply low output current for the battery automatically. When voltage of the battery rises to the given voltage value, the charge mode will turn to constant current charge mode automatically.

**Constant current mode:** The charger supply constant charge current for the battery.

**Constant voltage mode:** Using the pulse width modulation(PWM) tech to control the charging current and output voltage of the charger which ensure the battery is charged fully and avoid over charged.

**Floating charge mode:** When the voltage of the battery is closing the value of the constant voltage mode, and the current cut down to the given current gradually, that means the battery power is full, then the pilot lamp will turn green and the fan will stop working. The charger will turn the mode into floating charge mode automatically. At this moment, the battery can be stopped charge or kept on floating charge.

## Charging graph



## Protect feature

- Overheated protect:** when the temperature of charger shell over 85℃, the charging current auto reduced to half of the original current, when the temperature over 105℃, the charger protective turn off, this moment no current input. Auto recover charge when the temperature fall to about 80℃
- Short-circuited protect:** when the charger input happen to short-circuited, the charger input auto turn off. The charge will charge again after restart.
- Low-pressure protect:** when the battery simple lattice lower than 1.4V, the charger protective turn off or unable to start to avoid the damage equipment when the battery doesn't match the charger nominal voltage.
- Reverse protection:** a reverse connection protection of the inverter is connected with the battery, positive and negative pole misconnection will not damage the battery charger.

## Warn

1. High voltage and dangerous inside the charger, please contact with the dealer or the manufacturer when the charger was broken. If you are not the professional maintenance staff of our company, don't open and repair it.
2. Please put the charger in a good radiating environment when you use it, and prohibit using it in damp, high temperature, flammable and explosive environment.

**Note:** there is a reverse connection protection function of the charger without connecting the battery, output no output voltage, when the output is connected with the battery through the trigger after the output.

## Charge instructions

1. charge early stage: The red light turn on indicates that charging for the battery by rated current.
2. charge later stage: The green light turn on indicates that the charger is in the float mode for charging. This moment added the final 95%-100% electricity. Leaving the battery connected to the charger for two or three hours, that will make the battery storage for the best function.