



Battery charger

Model name: FC-12B



Read through carefully and understand these instructions before use.

2016

Manufacture: Zhejiang Kende Mechanical & Electrical CO., LTD.

Address: Shuiquetou Industrial Zone, Shugang Road Cross Dongfang Road, Pengjie Town, Luqiao district Taizhou, Zhejiang 318057, P.R. China

Introduction:

In this operating manual, the following symbols are used:



DISPOSAL: Do not dispose this product as unsorted municipal waste. Collection of such waste separately for special treatment is necessary.



Read operator's manual



Indoor use only!



Explosion Hazard!



Observe warnings and safety guidelines!



Danger of electric shock!

Intended use:

The charger FC-12B is intended for charging 6/12V d.c. acid-lead/AGM/GEL batteries (only rechargeable, maintenance-free, closed batteries, lead-acid batteries (SLA)) as installed in cars, boats, lorries and other vehicles, and can not be used to charge non-rechargeable, Nicd or other types of batteries.

This including different types of lead-acid batteries such as:

- Wet batteries/ closed lead batteries (liquid electrolyte)
- Maintenance-free batteries and VRLA batteries (valve regulated lead-acid batteries)
- **AGM/GEL type batteries**

Do not use it for any other purpose.

The charger can be directly connected to the batteries using the clamps.

The charger is not intended for charging battery types not listed above.

The charger is solely approved private use. Any other use or modification of the charger is considered inappropriate and involve substantial hazards. The manufacture assumes no liability for damages arising from improper use.



Warning!








Familiarize yourself with all charger functions and learn how to correctly use the device before first using it. For this purpose, please carefully read the following operating instructions. Store this manual in a safe location. When passing the charger on to other, be sure to also include all documentation.

Contents:

Please check the contents immediately after opening the package. Check the charger and all parts for damage. Do not operate a defective charger or parts.

- 1 pc charger
- 1 pc operating manual

Rating label:

Zhejiang Kende Mechanical & Electrical CO., LTD.			
ADD: Shuiquetou Industrial Zone, Shugang Road Cross Dongfang Road, Pengjie Town, Luqiao district Taizhou, Zhejiang 318057, P.R. China			
     	Battery charger FC-12B		
	Input:	230V~ 50Hz, 250W	
	Output:	Setting Choose	
		12V REGULAR 12V AGM/GEL	Fast charge: 12V d.c., 12A Normal charge: 12V d.c., 2A
		6V REGULAR	Fast charge: 6V d.c., 12A Normal charge: 6V d.c., 2A
Engine Start	12V d.c., 75A 5s ON, 180s OFF, Max.5cycles		
	Apply to Lead-acid battery Fast charge: 20Ah-120Ah Normal charge: 4Ah-30Ah		
Warnings: <ul style="list-style-type: none"> • Before charging, read the instructions • For indoor use, or do not expose to rain • disconnect the supply before making or breaking the connections to the battery • WARNING: Explosive gases. Prevent flames and sparks. Provide adequate ventilation during charging. 			

Model	Charging Current and capacity of batteries		Engine Starting current	Suitable vehicle
FC-12B	(2A) / 4-30Ah	(12A) / 25-120Ah	75A	Medium and small

Safety:

General safety guidelines:

Read all safety guidelines and instructions. Non-compliance with safety guidelines and instructions can cause electric shock, fire and/ or serious injury. Keep all safety guidelines and instructions for future reference.



Warning!



Life-threatening danger to infants and children. Never leave children unsupervised with the packing material as this can cause suffocation.

Never allow children to play with cables – strangulation hazard!

Never allow children to play with components or mounting parts, they could be swallowed and result in suffocation.

This appliance 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 appliance in a safe way and understand the hazards involved.

Cleaning and user maintenance shall not be made by children without supervision.

Children should not play with the appliance..

The manufacturer is not responsible for damages caused by:

- Improper connection and / or operation.
- Exterior force, damage to the device and / or damage to parts of the device caused by mechanical impact or overload.
- Any type of modification to the device.
- Use of the device for purposes that are not described in this instruction manual.
- Consequential damages caused by non-intended and / or improper use, and / or defective batteries.
- Moisture and / or insufficient ventilation.
- The unauthorised opening of the device. This will void the guarantee.

Safety notices for charger:

1. SAVE THESE INSTRUCTIONS - This manual contains important safety and operating instructions for battery charger.
2. Before using battery charger, read all instructions and cautionary markings on battery charger and battery.
3. Non- rechargeable batteries cannot be charged with this battery charger.
4. During charging, the battery must be placed in a well ventilated area. Keep the working area tidy to reduce the risk of fire, electric shock and explosion. Do not cover the charger and battery pack with a cloth while charging.
5. The battery charger contains components which can produce arcs and

sparks when in use. **WARNING:** Explosive gases. Prevent flames and sparks. Provide adequate ventilation during charging.

6. To prevent fire or explosion, only use in a well-ventilated area. When charging, it is prohibited to start the engine or perform ignition and other dangerous actions. Do not charge in a garage or other enclosed space. Provide adequate ventilation during charging.
7. Never touch battery terminals or battery clamps whilst the device is connected to alternating current.
8. **When charging automobile batteries:** 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 the supply mains; after charging, disconnect the battery charger from the supply mains. Then remove the chassis connection and then the battery connection.
9. Remove all device cables from the battery before attempting to drive your vehicle
10. Use a power source with the voltage specified on the nameplate of the charger.
11. Check the input voltage (230V ~ 50Hz) and ensure that it corresponds to the mains voltage, otherwise the charger may be damaged.
12. If an extension cable is used, the cable diameter must be sufficient for the power required by the charger
13. Do not charge the battery packs in presence of flammable liquids or gases.
14. Never short circuit the device or connect the inlets and outlets of the device using metal objects. Only use the supplied connecting cables to connect the device to a battery.
15. Always make sure that the charger is disconnected from the mains when you connect it and disconnect it to a battery.
16. Never place the device over or close to the battery to be charged. Gases from the battery make the charger corrode and damage it. Set up the charger as far away from the battery as the direct current cable allows.
17. Ensure that the device is always stored in a safe place. Do not expose the device to rain or snow or other wet conditions. Avoid pouring or dripping water or other liquids over it. If water penetrates electrical devices, the risk of electric shock increases.
18. To protect against the risk of electrical shock, do not immerse the unit, cord or plug in water or other liquid.
19. Ensure that all plugs and cables are free of moisture. Never connect the device to the mains with wet or moist hands.
20. Never carry charger by cord or yank it to disconnect from receptacle.
21. After charging or before attempting any maintenance or cleaning, unplug the charger from the power source.
22. Always disconnect the charger by pulling out the power plug other than cord whenever disconnecting charger.

23. Make sure cord is located so that it will not be stepped on, tripped over, or otherwise subjected to damage or stress.
24. If the cables need to be run through walls with sharp edges, for example metal sheets, use tubes or cable ducts to prevent damage to the cables. Lay electrical cables in such a way that it is not possible to stumble over them, thereby preventing damage.
25. Do not operate or disassemble charger if it has received a sharp blow, been dropped, or otherwise damaged in any way; take it to a qualified serviceman. Incorrect use or reassembly may result in a risk of electric shock or fire.
26. Keep the charger away from children. Children do not understand or perceive possible risks when handling electrical devices.
27. 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 should be supervised to ensure that they do not play with the charger.
28. Do not charge battery packs when temperature is below 10°C(50°F) or above 40°C(104°F).
29. Do not attempt to use the charger as a step-up transformer, an engine generator or DC power receptacle.
30. When the appliance is not in use and cleaning, unplug the appliance from the outlet. before
31. Do not operate charger with damaged cord or plug.
32. Only operate the charger if all cables and the casing are intact.
33. Never operate the device if it has been dropped or damaged in any other way. For inspection and repair, take it to a qualified electrician.
34. This charger belongs to type Y attachment, if the supply cord is damaged, it must be replaced by the manufacture, its service agent or similarly qualified persons in order to avoid a hazard.
35. All maintenance work must be conducted by qualified electricians.
36. Never disassemble the device, incorrect assembly may cause electric shock or fire.
37. For the protection class is IP20. The product shall not be used outside the room, where it is the rainy and snowy.
38. In the course of charging, the charger should be put at a level place and shouldnot be tilted or reversely placed.
39. As the casing can generate heat during charging. it is prohibited to cover the vent of casing.
40. The maintenance work for the charger should be done by the professionals.
41. When electrified, the battery clamps should not be contacted with each other.

42. The cover of battery should be opened in the course of charging.
43. It is prohibited to connect the battery clamps reversely. (e.g., wrongly connect the red clamp of anode to the cathode of battery, or wrongly connect the black clamp of cathode to the anode of battery)
44. It is prohibited to use the charger for the charging of non-charging batteries.
45. In case the power cable is damaged. the damaged cable should be dismantled and replaced by professionals for maintenance.



Warning!

- Never try to charge damaged, non-rechargeable or frozen batteries.
- This charger is only suitable for listed batteries (rechargeable, maintenance-free, closed batteries, **AGM/GEL**, lead-acid batteries (SLA)) and may not be used to charge non-rechargeable, Nicd or other types of batteries. Do not use it for any other purpose.
- No not use the charger to charge dry cell batteries. These may explode and cause injury to persons or material damage to property
- Do not use the charger as a power supply for an electrical low voltage system.
- Ensure that you have read and understood the instruction manual and all safety instructions that were supplied with the battery to be charged or the vehicle.
- Avoid all contact with battery electrolyte acid. If your skin comes into contact with battery fluid, rinse it thoroughly under running water and contact your doctor. Should your eyes come into contact with battery acid, rinse them with running water for at least five minutes and contact your doctor.
- Always pay attention to the correct polarity if you connect the device to a battery.
- This charger is not designed to supply RVs with power.
- This charger is not designed to be installed as an accessory in the vehicle.



Explosion HAZARD!

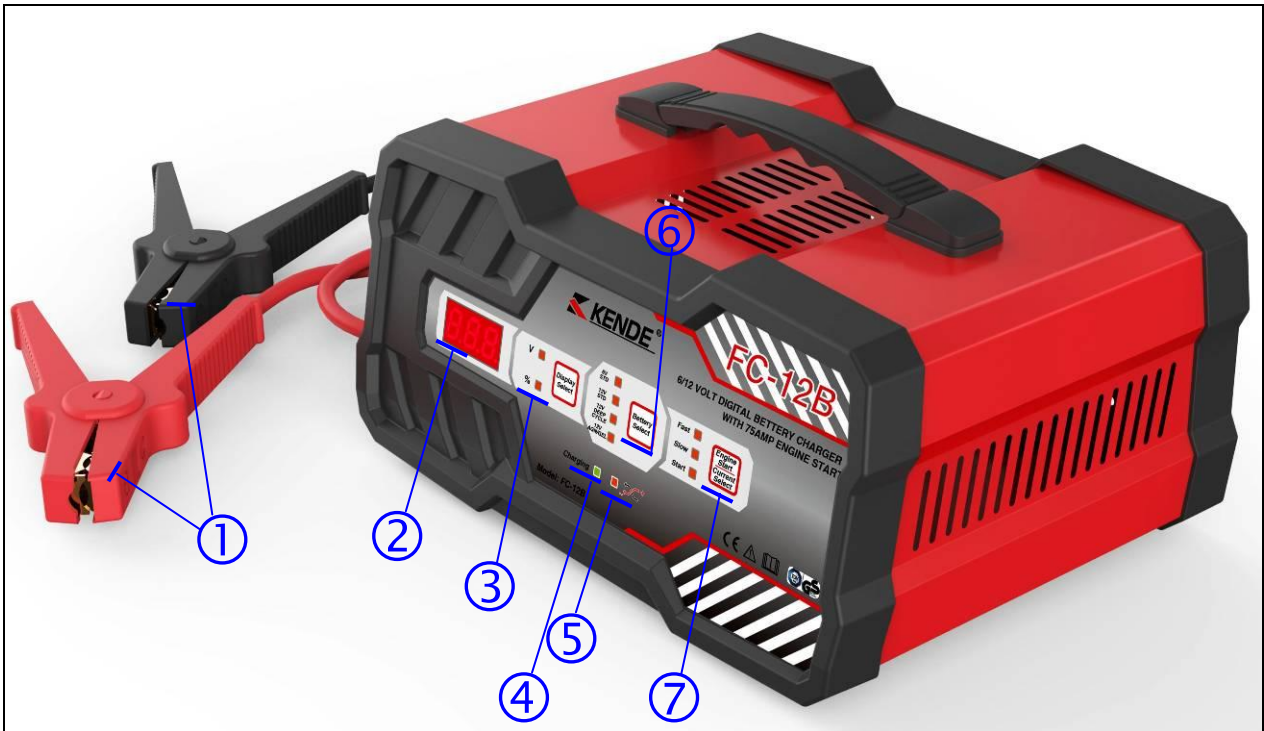
When charging, bubbles may form due to the release of gas. This gas is inflammable and explosive!

- Never charge the battery close to an open fire or in places where sparks may occur.
- Always ensure sufficient ventilation.
- Only connect and disconnect the battery connecting cables when the charger is disconnected from the mains.

Before charging batteries:

- If the battery must be removed from the vehicle before charging, always disconnect the earthed connector from the battery first. Also ensure all other loads in the vehicle are off.
- Ensure adequate ventilation to allow any toxic vapours or gasses to disperse.
- Ensure the battery poles are clean. If the battery has a removable vent cap, fill each battery cell with distilled water to the manufacture recommended level. Do not overfill the cells.
- If the battery has not caps, refer to the manufacture instruction on charging and the charging speed.

Product View:



1. Positive(+) and negative(-) polarity clamps
2. LCD display, which displays the battery voltage or percentage of the charging battery. You can select the item display by press the “Display” button



3. LED light to display which display item is selected.
4. LED light to indicate charging process, if the light flicks, it means that the charger is running at battery fixing stage. Once the battery fixing stage is finished, the light will become always on status to indicate that the charging process is running. And the LED light will be off and the LCD display “FUL”, once the battery is fully charged.
5. Red LED light up: means the output clamps is wrong connected. You should connect red clamp to the positive terminal of the battery and black one to the negative.



6. Charging battery select button, according to the battery you connect, you can push the “Battery” button to choose different battery types and charging voltage 6V or 12V. If wrong charging voltage is selected, the LCD display will display “FUL” and there will have no output current



7. LED Display and Engine Start function select button, according to

your requirement, you can choose different charging current. If fast mode is selected, the max. charging current will be 12A and 2A at slow mode. Please press the “Engine Start” button and hold for more than 3 seconds, it will come into “Engine Start” process, then you can use it to start you vechile at the cycle no more than 5S on and 180S off, max. 5 cycles allowed.

Note that 2A charging current is suit for 4-30Ah batteries and 12A charging current is better for the capacity of 25-120Ah batteries.



Risk of electrical shock!

Always verify the charging device is disconnected from the 230V AC outlet when connecting to a battery. Always ensure the area around the battery is well ventilated during the charging process.

1. Connect the positive charging clamp(red) to the positive battery terminal(marked P or +).
2. Connect the negative charging clamp(black) to the body of the vehicle, or in expectations to the negative battery terminal(marked N or -).
3. Verify both terminal clamps make good contact with the respective terminals.
4. Plug the power plug into a suitable AC mains outlet.

Note that the start current of this charger: 75A (START: 75A 5S ON 180S OFF and max. 5 cycles allowed)

Functional Characteristics

1. Secondary phase-shifting, conducting and constant-current control of transformer.
2. 3-digit 0.56” LED display, indicate charging voltage, percent and starting current.
3. Thermometric self-adjusting starting interval control circuit (with the increase of starting times, starting time can be automatically decreased and interval increased)
4. This battery charger has reconditioning function. When the voltage of 12V battery is less than 10.5V, the battery charger will automatically reconditioning the battery. After 15 minutes, the battery charger will detect whether the battery is good or bad.
5. Output short circuiting and overload protection (Output voltage monitor circuit is set up to cut off the output current when the load is short-circuited, overloaded or reverse polarity connected. The circuit will recover the output automatically as soon as the load is connected correctly.
6. Indication and protection of the reverse connection of battery

Charging Process Description

1. Charging operation

- a. To connect the charger’s red clamp to the battery’s “+” polarity, connect the charger’s black clamp to the battery’s “-” polarity.
- b. To input the charger’s power plug to the power supply.
- c. The charger’s LED display will flash to show voltage of battery.
- d. Press “BATTERY SELECT” button, user can choose the battery’s type which need charge. (Such as STD or AGM or GEL)

- e. Press “CURRENT SELECT” button, you can choose the charge current you need. (Such as FAST or SLOW) .
- f. Confirm all choice is correct. After 5 seconds, till the digital on LED display and “Charging” indicator are long bright, it means the charger is under charging working condition.
- g. -If user choose “6V” to charge a 6V battery ,after operate step a-f,the unit enter into a normal charging condition.
-If user choose “6V” to charge a 12V battery, after operate step a-f,LED display will show “FUL” .
-If user choose “12V” to charge a good 12V battery which voltage is more than 10.5V, after operate step a-f, the unit enter into a normal charging condition.
-If user choose “12V” to charge a battery which voltage is less than 10.5V, the battery charger will automatically reconditioning the battery. User can see reconditioning indicator flashing, after 15 minutes, the unit will detect whether the battery is good or bad. If the battery is good, it will be charged normally. If the battery is bad, the digital display will flash “bAt”, then stop working.
- h. When the charger is working normally, you can press “DISPLAY SELECT”, to check charging voltage, battery capacity percent.
- i. When the charger is charged, the LED display will be show “FUL”.

2. Starting operation

- a. Charge the battery for 10-15 minutes according to steps a-f in the charging operation section above.
 - i. Press the button of “ENGINE START” for 3 seconds, the indicator below “ENGINE START” will be lighted, then you can start your vehicle and starting current will be showed on LED Display.
 - ii. At most for 5 seconds, the charger will stop the starting mode and turn into rest mode. Meanwhile, for the next time to go to start mode will be count down and showed on LED Display like:180 – 179 – 178 -3 – 2 - 1.
- b. If you need to exit “ ENGINE START” mode, press “ENGINE START” once, the light below “ENGINE START” will turn off, which represents that the charger has already exited “ENGINE START and turn into charging mode.



Warning!

- i. Do not crank engine for > 5s
- ii. Wait approximately 180s between starting attempts
- iii. Do not attempt to start more than three times. If three attempts fail, the vehicle’s battery should be recharged 15-30 minutes



Warning!

The charging process must be monitored and the charging time limited. Please follow the instructions of the battery manufacture.

Continuous connection of the charger can damage the battery.

Pay attention to connect the Positive and negative of battery correctly .

End charging process:

1. Unplug from the AC outlet.
2. Disconnect the charging clamp(black) from the vehicle's bodu, in exceptions from the negative battery terminal(marked N or -)
3. Disconnect the positive charging clamp(red) from the positive battery terminal(marked P or +).



WARNING!

4. Before use, carefully read the instruction manual and retain for future reference.
5. Start charging voltage is 3V, when users' battery voltage is less 3V , the charger will not have any function of the output.
6. For engine start, the maximum engine cranking time is 5sec with a minimum off time of 180sec. Do not attempt Engine Start more than 3 times at one time.
7. The battery charger & engine starter is not weather proof. So care and common sense must be exercised if using outdoors. Do not expose to moisture.
8. Never smoke near the charging area, it will cause a spark or charge near an open flame. Please move the conductive materials away, which will short circuit the charger or battery terminals.
9. This appliance is not intended for use by young children or infirm persons without supervision and should be always be used responsibly and stored in an appropriate place to prevent misuse.

Cleaning, Care and Service

Your charger can be kept functional for years with minimum care.

- After charging process is completed, clean the clamps. To prevent corrosion, wipe off any battery fluid that has come into contact with the clamps.
- Roll up the cables properly when you store the charger. This helps to prevent damage to the cables and the charger.
- Occasional cleaning of the charger casing with a soft cloth keeps the surface shiny and helps to prevent corrosion.
- Store the charger in a clean and dry location.

Service

Leave the repair of the device to qualified technical personnel. Thus, the safety of the device is guaranteed and maintained.



Caution!

Only qualified technical personnel should change the plug or the connecting cables. This will guarantee the safety of the device is maintained. If the product is no longer suitable for use dispose of it in an environmentally friendly manner in accordance with your local ordinances.

Troubleshooting

Fault	Possible cause	Solution
No charging current	Bad contact of power socket	Repair or change power socket.
	Initial voltage is less than 3V	Replace battery.
	+ and - polarity terminals of battery are oxidized and/or dirty.	Clean terminals.
	Battery has been damaged.	Replace battery.
Low charging current	+ and - polarity terminals of battery are oxidized and/or dirty.	Clean terminals.
	Battery not accepting charge	Replace battery.
	Battery is charged fully.	Measure the battery voltage
abnormal transformer noise	Unstable position	Move to a stable place