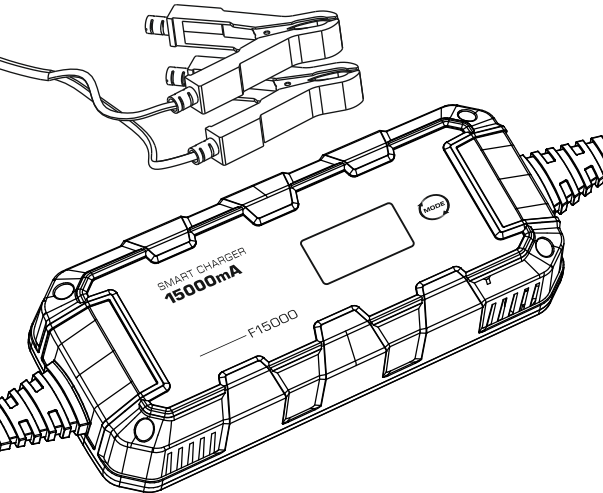


ATO.com

F15000 User Manual



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Version 1.0

Before using this product, be sure to read this instruction carefully. Be sure to keep this book properly so that you can consult it at any time in the future. Please use it correctly on the basis of full understanding of the content.



Important security warnings

Please keep this manual for future reference.

This manual contains all safety, installation and operating instructions for battery chargers, hereinafter referred to as "chargers "

- Check that the supply voltage is consistent with the nameplate voltage on the charger.
- Make sure that no short circuit is caused when connecting the charger.
- After use, when cleaning or maintaining the charger, the connecting cable must be disconnected.
- Children are not aware of the danger of electrical equipment, please put the charger in a place that children can not contact.
- Do not attempt to disassemble or modify any part of this manual that is not stated. Disassembly or modification of this product may cause serious accidents. Internal inspection, modification or maintenance shall be handled by the distributor of the product or the qualified service personnel designated by the contact manufacturer.
- Do not touch the DC side and AC side exposed conductors without protective measures.
- Place the charger in a dry place. Do not place the charger in corrosive, salty, flammable and explosive gases, Rain Water or wet environment.

Ensure good ventilation, always maintain at least 5 cm of vents around the charger, place the charger in a dry place, do not place the charger in a corrosive, salty, flammable and explosive gas, high temperature, Rain Water humid environment.

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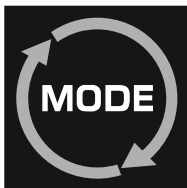
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User Instructions

1.1 Operating steps

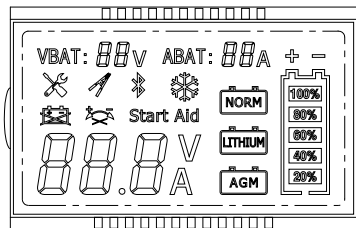
- 1 Plug the charger into 110VAC power outlet;
- 2 Connect the red clip of the charger (marked "+") to the positive electrode of the battery.
- 3 Connect the black clip of the charger (marked "-") to the battery negative.
- 4 Double-click the mode key switch, when the battery voltage flashes, click the mode switch to select the appropriate battery voltage;
- 5 Double-click the "mode key" switch, when the charging current flashes, click the mode switch to select the appropriate charging current;
- 6 Double-click the "mode key" switch, when the battery type flashes, click the mode switch to select the appropriate battery type;
- 7 Double click press "mode key" switch, this time low temperature mode flicker, click mode switch to select enter low temperature mode, if you do not need low temperature mode, this step can be skipped;
- 8 Long press the "mode key" switch for 3 seconds to save the charging parameters, if you need to reset the new parameters, unplug the input plug after the power off to re-operate step 4-7;
- 9 Click the "mode key" switch to start charging, while the system power off to retain the parameters of this setting, the following use does not need to adjust the parameters, you can skip step 4-7, directly click the "mode key" switch to start charging;
- 10 If the battery voltage of the charger does not match the actual battery voltage, the LCD screen will report the error after pressing the "mode key" switch Please confirm that the battery voltage is normal at this time E06, If normal, press the "mode key" switch again to open the charge;
- 11 When the battery is low and can not start the car, the battery needs a jump charge to charge the battery. Jump charging operation method is: after power on long press "mode key" switch more than 5 seconds, this time will first appear repair mode icon flicker, and then long press 5 seconds, "Start Aid" icon will flicker, this time click into jump charging mode.
- 12 When the old battery needs to be repaired, press the "mode key" switch for more than 5 seconds after power on. At this time, the repair mode icon flashes, and click into the battery repair mode.
- 13 After charging, unplug, disconnect the electricity, and then remove the clamp from the battery.

1.2 Mode Key






Used to set charging parameters.

1.3 LCD indication



LCD screen display, can display the battery voltage, charging current, battery power, battery type, working state, fault code and other content during the charging process, if there is an abnormal condition, can display error information and code.

1.4 Fault display

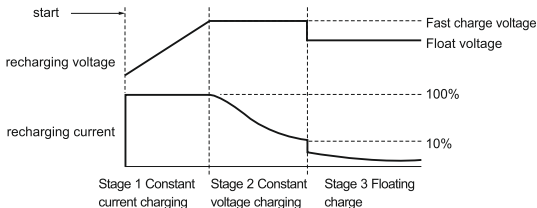
Protection Type	Display Content	Fault Analysis	Processing Scheme
Dead battery	Fault code E05	Increase in internal resistance of battery	Replacement of battery
Battery reverse connection	 Fault code E03	Charger clamp battery positive and negative electrode wrong	Re-clamp the positive and negative electrodes of the battery
Output disconnected	 The icon flashes, Fault code E02	Char charger clamp not connected to battery	Please connect the charger clamp to the battery
Output short circuit	Fault code E01	Short circuit of charger output	Please disconnect the output short circuit
Over-temperature protection	Fault code E04	<ol style="list-style-type: none"> High ambient temperature of charger Fan inlet or outlet blocking Fan does not rotate 	<ol style="list-style-type: none"> Standard charging environment according to charger specification Remove blocked items Fan stuck or fan broken, replace fan
Battery voltage error	 Fault code E06	Battery voltage selection error	If the battery voltage is incorrect, please re-select the correct battery voltage

1.5 Charging mode

Three-stage charging: Lithium batteries need to go through three stages of constant current charging, constant voltage charging and floating charging during the charging process.

Note: The rechargeable lithium battery must have a battery management system.

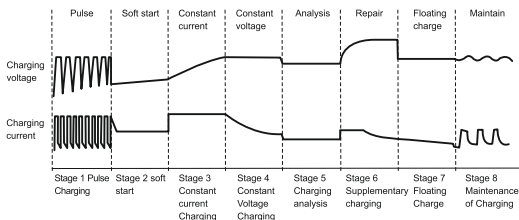
Three-segment charging curve



Initial stage battery analysis	By detecting the battery voltage, it can be judged whether there is a battery connected or whether the battery is fully charged without recharging.
Phase 1 Constant current charging	This stage quickly introduces energy to reach 80% state of charge in a short time. (Charging current is the rated current marked on the product, and constant current charging)
Phase 2 Constant voltage charging	After fast charging, it enters the stage of constant voltage charging. About 20% of the electric energy is not fully charged. At this time, the charging rate drops and the voltage remains constant (12V battery voltage remains 14.4V), and the energy is gradually absorbed to reach 100% charging.
Phase 3 Floating charge	At this stage, the float voltage is maintained at the corresponding float voltage, so that the battery can be fully charged.

Eight-stage charging: The battery needs to go through eight stages of pulse charging, soft start, constant current charging, constant voltage charging, charging analysis, supplementary charging, floating charging, and maintaining charging during the charging process.

Eight-segment charging curve



The first stage pulse charging	After the battery is used for a period of time, precipitation and vulcanization will occur, which affects the efficiency of charging and discharging and battery use. The first stage of eight-stage charging is desulfurization to eliminate vulcanization. Allow the battery to reach a 100% charged state again.
The second stage soft start	After the desulfurization is over, the charger will initially introduce energy gradually. Different from fast charge chargers, this stage can protect the battery and extend the battery life.
The third stage constant current charging	This stage quickly introduces energy to reach 80% state of charge in a short time. (Charging current is the rated current marked on the product, and constant current charging).
The fourth stage Constant voltage charging	After fast charging, it enters the stage of constant voltage charging. About 20% of the electric energy is not fully charged. At this time, the charging rate drops and the voltage remains constant (12V battery voltage remains 14.4V), and the energy is gradually absorbed to reach 100% charging.
The fifth stage Analyze the state of charge	The battery automatic detection function is triggered after the end of the fourth absorption phase. During the battery test phase, the voltage is detected for 90 seconds to determine whether the charging has been successful.
Sixth stage Supplementary charging	Further feedback on the fifth stage. If the fifth stage detects that it is not fully charged, it will continue to input a small continuous current for 4 hours to fully charge the battery. If the fifth stage test is OK, this stage will be skipped and enter the seventh stage. The repair phase can repair the deep discharge state of the battery, improve the performance of the battery and extend the battery life.
Seventh stage Float charging	Provide float voltage to maintain at the corresponding float voltage, so that the battery can remain fully charged.
Eighth stage Maintain charge	Maintaining the charge ensures that the battery remains fully charged under any circumstances.

1.6 Battery type and output voltage

Battery Type	6V	6V Floating voltage	12V	12V Floating voltage	24V	24V Floating voltage
NORM	7.2±0.2V	6.8±0.2V	14.4±0.2V	13.6±0.2V	28.8±0.2V	27.2±0.2V
AGM	7.4±0.2V	6.8±0.2V	14.8±0.2V	13.6±0.2V	29.6±0.2V	27.2±0.2V
Lithium	7.4±0.2V	7.1±0.2V	14.6±0.2V	13.6±0.2V	29.2±0.2V	27.2±0.2V

Remarks:

Standard battery types: lead-acid, gel, enhanced flooded battery, maintenance-free battery and calcium battery.

Product Function

2.1 Controlled Fan Function

When the charger is in constant current and constant voltage during normal charging (current greater than 4 A or temperature greater than 50°C), the fan works normally.

2.2 Minimum start-up voltage

When the charger clamp is connected to a battery (or other DC power supply) with a certain voltage, it can only be triggered.

The charger enters the working state. Minimum 2.5% voltage for this battery 0.2 VDC.

2.3 Reverse protection

When the charger is in the charging state, the output clamp is inversely connected, and the charger has inverse protection. will not have any adverse effect on the performance of the charger during this process.

2.4 Short-circuit protection

When the charger is charging, if the output clamp is short-circuited, the charger will be short-circuited protection will not have any adverse effect on. the performance of the charger during this process.

2.5 Over-temperature protection

When the internal temperature of the product reaches the temperature protection point, it will enter the protection state and turn off the output. Reduce the internal temperature of the charger naturally, before cooling to the ambient temperature should be able to quickly output.

2.6 Lead acid battery repair

Due to improper use or excessive discharge of the battery, the internal resistance of the battery will become larger and smaller. The battery repair function can reduce the internal resistance of the battery to a certain extent by charging the battery with long time, small current and high voltage. When the charger is connected to the power supply and the clamp is connected correctly with the battery, it will automatically judge whether the battery needs to be repaired, that is, after entering floating charge, Display battery voltage 6 V battery <12 V, 24V battery <24 V, can manually enter repair state, repair current greater than 1.5 0.3 A, repair battery voltage 2.5.

2.7 Jump charging

After power on, long press "mode key" switch for more than 5 seconds, this time will first appear repair mode icon flicker, then long press 5 seconds, "Start Aid" icon will flicker, click into jump charging mode. Press the "Start Aid" key charger to charge the battery quickly. The charging current can reach up to 20 A, and the charging time is 300 S, The car ignition switch can be started by continuously opening the battery, which can provide 75 A current to start the car motor. Reconnect the battery and then operate the above steps to enter the jump charging state.

2.8 Bluetooth Data Transfer

Increase Bluetooth data transmission, through the mobile phone APP charger status and data can be displayed on the APP (default without, optional).

Product Parameter

Model	F15000
AC input	100VAC-125VAC/60Hz
DC output voltage	DC6V/12V/24V(optional)
Charging current	DC6V:4A/8A/15A DC12V:4A/8A/15A DC24V:2A/4A/8A
Charging mode	3 stage charging for Lithium battery 8 stage charging for lead-acid batteries
Applicable battery type	Standard lead acid (containing WET/ GEL/MF/CA/EFB), AGM, Lithium
Cords	Input line 1.65M Output line 1.65M
Efficiency	85% (MAX)
Working temperature	0°C-40°C
Heat dissipation mode	Fan
Product Size	368*122*70mm
Product N.W	1.25KG
Packing Size and Quantity	420X410X445mm 12pcs/ctn