

8. Protection Features:

- 1)Over Temperature Protection: When the charger internal temperature reaches protection point, the charger will stop charging automatically and the LED is flashes red alarm.
- 2)Output Short-circuit Protection: When the charger appears short-circuit, it will cut off the output current and the LED is flashes red alarm.
- 3)Reverse Polarity Protection: When the battery polarities are reversely connected, the charger will cut off the connection and the LED is flashes red alarm.
- 4)Output Over-Voltage protection: When the charger output over-voltage, it will cut off the output current and the LED is flashes red alarm.

9. LED Indicator:

LED Status	Charger Status
LED (Charging)	Battery is charging
Flashes Blue	
LED(Full)Always on Green	Battery fully charged/Charger is not connected to the battery.
LED flashes red	Charger under protection (over temperature protection, output short-circuit protection, reverse polarity protection, output over-voltage protection).

10. Troubleshooting:

If the charger does not work properly, the following methods can help you solve the general problem quickly. If you still cannot rule out the possibility of failure,please contact

Failure Mode	Troubleshooting Methods
LED light is not on	a. Input connector must be connected firmly. b. Turn on the power switch.
The charger does not charge and the LED is always green	a. The output connector must be connected firmly b. Probable battery failure or damage: Con-tact the battery manufacturer to confirm.
The charger does not charge, and the LED is Flashes Red	a. Make sure the output polarity is correct. b. Battery voltage is too high to match the battery charger. Contact the battery manufac-turer to confirm.
battery is not fully charged	a. The output connector must be firmly con-nected b. Output cable must not be too long. c. Probable battery failure or damage: Con-tact the battery manufacturer to confirm.

ULTRAMAX®

58.4V/15A Lithium Battery Charger Instruction Manual

1. Summary:

The battery charger has single chip microcomputer (MCU) controlled 3 stages intelligent charging technology, which can accurately track the battery charging process, and make the battery always in the best electrochemical reaction condition, in order to prolong its service life.

Charger input voltage range is wide, with multiple protection features, and high reliability. Control circuit adopts advanced high frequency transformer LLC half-bridge resonant soft-switching power supply control technology, the reasonable structure and thermal design make the charger with high efficiency, small dimension, light weight and greatly improve the portability.

2. Application Scopes:

This series chargers are widely used for charging Lithium batteries of electromobile, electric bicycle, electric tricycle, electric forklift, electric vehicles, electric motorcycles, electric sweepers, electric boats, electric sightseeing cars, electric golf cart, electric tractor, electric lift trucks, electric medical equipment, electric transportation trucks.

3. Maintenance and Precautions for Using:

- 1) Check the battery technical specification very carefully before charging, to make sure it matches the charger technical data.
- 2) Make sure charger output connect to the batteries on correct polarity.
- 3) Input/output connectors must be connected firmly during charging.
- 4) Reverse connect or short circuit are prohibited during charging.
- 5) If charger or battery found to be abnormal or damaged during charge, please unplug input and output wires right away.
- 6) If use other input wires, make sure the cable can withstand for the maximum input current of the charger, and the charger's input voltage is within its working scope.

- 7) If you need to extend the output connection cable, please make sure the cable can withstand for the maximum output current of the charger, and the voltage-drop between the charger and connection wire of the battery should be less than 1% of the battery voltage as possible. Otherwise, it may affect the effect of charging process.
- 8) High voltage and dangerous inside this charger, when there's a defect, please contact with factory. Users and the maintain person who is not professional staff in our company are forbidden to open or re-develop this product.
- 9) Never use during a lightning storm.
- 10) Don't wet the charger body, never use it in wet or rained place.
- 11) Never use it near the heat source or where is shined by the straight sunshine.
- 12) Never use it in or near the place of flammable gas.
- 13) Use it in the ventilated and dustless place.
- 14) Don't place rod or other metal objects at vent or other openings.
- 15) Never cover the air vent, always leave 10cm space for it at least.
- 16) Don't shake, bump or throw it strongly.

4. Use Method:

- 1) Close the power switch firstly.
- 2) Connect the batteries to the output socket with output wires—positive to positive, negative to negative.
- 3) Plug the input wires correctly and connect to the input power source then.
- 4) Open the power switch, LED flashes blue means battery is being charged.
- 5) LED always green means battery is fully charged, switch off the charger.
- 6) Disconnect the input cable.
- 7) Disconnect the output wires.

5. Product Features:

- 1) High efficiency, small size, light weight: Charger control circuit adopt advance LLC half-bridge resonant soft-switching power supply control technology, proper structure as well as nice thermal design make the charger small and light with good portability.
- 2) Switching power supply type and MCU controlled charging technologies, exclusive precharge mode supplies activate, repair and prolonging life functions for long-term unused or deep sleep batteries.
- 3) High reliability: The charger is made of high quality military and industrial levels components. Advanced circuit design and strict production process according to ISO9001:2015 quality management system make the charger with low reject rate, high reliability and long service life.
- 4) The charger is reliable with multiple protections, such as over temperature protection, output short-circuit protection, reverse polarity protection, output over-voltage protection, that prevent damage by faulty operations.
- 5) The charger case is made of aluminum alloy with surface oxidation treatment, high-grade, fashion, good heat dissipation ability, high hardness, antioxidative, non-fading.

6. Technical Specifications:

Input Voltage Range: AC100V~240V 50Hz-60Hz
 Maximum Input Current: 12A
 Output voltage: 58.4Vdc
 Output current: 15A
 Operating Temperature: -10°C~45°C
 Storage Temperature: -40°C~70°C
 Relative Humidity: 5%~95%
 Atmospheric pressure: 70KPa~106KPa
 Dimensions (mm): 285(L) × 142(W) × 90.5(H)
 Net Weight: 2.4Kg

7. Charging Mode:

- 1) **Precharge stage (T1):** When the battery voltage is lower than normal standard, the charger cannot withstand large current charging. The charger will supply small current for charging, which has the functions of activation, repair and battery life extension. When the output voltage reach normal value or at the T1 of the timing period, the charger will switch to fast charge stage automatically.
- 2) **Fast charge stage (T2):** When battery is on the main period of charging, charger will quickly charge the batteries with a constant flow, at the maximum current which can be used to the battery. When the battery voltage raise up to the set value, the charger will switch to constant voltage charge stage automatically.
- 3) **Constant voltage charge stage (T3):** the charger will switch to constant voltage charge stage, the charging current will fall off gradually, when the values drops to the set value or at the T3 of the timing period, Charger will turns off the output voltage automatically, battery charging is complete.

Charge curve as below:

Li-Ion battery charging curve

