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# SP2

## CHARGER INSTRUCTION MANUAL

Hong Kong XTAR Co., Ltd is a scientific research, production and service integrated enterprise. It is always focusing on LED flashlight, Li-ion charger and battery's research. It has Diving, Tactical, Sport, EDC series LED flashlights and intelligent Li-ion battery chargers, Li-ion batteries and related accessories complete product system.

HONG KONG XTAR CO., LTD

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## CHARGER INSTRUCTION MANUAL

### ■ Features :

- The XTAR SP2 is a professional automatic charger with high charging current, which is designed to charge two 14500/14650/17670/18500/18650/18700/22650/25500/26650 with 3.6 DC volts or 3.7 DC volts Li-ion batteries, simultaneously but in independent cell conditions. It is designed with under-voltage lock out and algorithm (TC-CC-CV) charging method which can monitor the battery status in real time, controlling the charging cycle safely automatically.
- The charger adopts PWM technology, to supply the charging management system charging power. The heat value of components is low even it is charging with high current, which is to save the energy, making SP2 more reliable, safer and more efficient.
- The SP2 charger incorporates a reverse polarity protection circuit board (PCB) and OVER/UNDER voltage disconnecting technology to prevent problems associated with contaminated cells, wrong polarity and short circuits caused by mishandling or abuse of the unit.
- SP2 is designed with 0.5A, 1A, 2A optional charging constant current, so that batteries with different capacities can achieve the best charging conditions. Charging batteries with the proper charging constant current can extend battery lifespan.
- SP2 shell is made from ABS fireproof material.
- At the beginning of charging, the charging current is increasing slowly to maximum current, which can avoid the impact from instant large charging current.

- The SP2 charger has a built in battery over discharging activation function, and up to some degree can repair under-discharged batteries and then charging them automatically.
- The XTAR SP2 has carried forward our WP2II, which is designed and built with the highest degree of QUALITY AND SAFETY in mind. It is a product that you can trust for its safety and reliability.
- SP2 is without any doubt one of the best 3.7 volts Li-ion chargers in the market today and due to its qualifications and high remarks by the owners, it has become the first time choice for thousands of users around the globe.

### ■ Electrical Technology Parameters:

- Charging qualifications and structures

Operation Temperature	0~40℃
Storage Temperature	0~70℃
Input AC	12V DC / 2.0A
0.5A CC Current	500mA±5%
1A CC Current	1000mA±5%
2A CC Current	2000mA±5%
Cut-Off Voltage	4.2±0.05V
0.5A gear Cut-off Current/TC Current	≤100mA
1A gear Cut-off Current/TC Current	≤150mA
2A gear Cut-off Current/TC Current	≤220mA
Standby Current	≤30mA
Auto Recharging Threshold Value Voltage	3.9±0.15V

### ■ Performance and LED Indicator Instruction:

- Gear Indicator Instruction
  - "0.5A" Gear: Constant charging current 500mA.
  - "1A" Gear: Constant charging current 1000mA.
  - "2A" Gear: Constant charging current 2000mA.
- Charging Status Indicator Instruction.
  - A. Charging properly: the indicator is red.
  - B. Indicator is green when the following situations happen:
    - a. Not battery inserted.
    - b. Short circuit at both channels.
    - c. Battery fully charged.
    - d. Activation for battery voltage lower than 1.5V.
    - e. Battery reverse connected or badly contacted.
- Because the charging current of SP2 is higher than some chargers, in order to make sure the instant charging current not too high to impact the batteries, XTAR has adopted a soft starting function, making charging current increasing slowly to the maximum current.
- Connected to the external power supply properly, when the batteries are fully charged, the charger will stop charging automatically, and when the voltage is detected lower than 3.9 volts range level, the charger start charging again, to avoid low voltage or over discharge of the batteries.
- The SP2 with built in battery interface short circuit protection function, protecting the charger from damage when the interface is short-circuit. Please note that: this function can not protect the battery, always remember to remove the battery before you do any testing.
- The SP2 charger is capable to repair some over-discharged damaged batteries (with volts ≤ 1.5V). Slide the damaged battery into the channel and connect the charger to the external power, the indicator light will turn on in green light, until

the battery reach the low voltage rated value, at this point the indicator light will turn to red and the charger starts automatically the normal charging cycle.

- Note: How long this process takes depends on battery conditions. Seriously over-discharged damaged batteries may not be possible to repair.**

### ■ Usage:

- The SP2 is designed to charge for one or two pieces of 14500/14650/17670/18500/18650/18700/22650/25500/26650 in 3.6 volts or 3.7 volts rechargeable Li-ion batteries. Please make sure the battery type is suitable for SP2 and insert the batteries properly before charging. Otherwise may cause dangerous.
- Use the specified AC adaptor to connect the power. After power connected, the charger system will start self-inspection, the charging status indicator will turn to green from red. Charger is in Standby mode. Default charging current is 0.5A and indicator turns to red in the 0.5A Gear.
- Press the constant current select button, to choose the suitable charging current. Default charging current is 0.5A, press the select button once to change to 1A charging current. Press twice to change to 2A charging current and three times, back to 0.5A current again. Analogy in turn. The corresponding indicator will be on.
- Suggestion to choose the charge current gear.**
  - "0.5A" Gear: 14500/14650/17670/18500/18650/18700/22650/25500/26650.
  - "1A" Gear: 14500/14650/17670/18500/18650/18700/22650.
  - "2A" Gear: 25500/26650.
- Insert the suitable battery after selecting the suitable charging current. Charger will start charging in 3 seconds after the battery properly inserted. The charging status indicator is red when battery is in normal charging. You can adjust the charging current by pressing the current select button.
- Charging completion. The charging status indicator will turn to green from red when charging is completed. Battery is ready to use.

### ■ Announcements:

- SP2 has three charging current for users to select. Users should choose the suitable gear based on the battery performance itself to achieve different charging purpose. To ensure the battery lifespan and safety issues, we recommend users to refer to the use method.
- If charging a low capacity battery with high charging current, it may cause battery not fully charged.
- SP2 applies to 3.6V or 3.7V rechargeable Li-ion battery. Please do not charge the non-suitable batteries, otherwise may cause dangerous.
- Please use the charger in dry environment, in order to avoid the current leakage.

### ■ Warranty:

- 15 days free replacement: We will repair or replace a light within 15 days of purchase if it is has a manufacturing defect. If the problem calls for a replacement, we will replace the charger with the same model as the one you bought. If the model has been discontinued, you will receive a product with similar or improved performance.
- 24 months free repair. We offer free repair within 24 months of purchase if problems develop with normal use.
- Limited lifetime warranty. If problems develop after 24 months there will be a charge for parts. The total repair fee will be assessed according to the cost of the replaced materials. If damage to the charger is grave, and XTAR distributor will contact you to decide whether to exchange the parts or not. Freight is paid by distributors or customers.
- This warranty is not applicable for damages cause by artificial or intentional force.**

### ■ Website:

- Welcome to visit our company website to get more information.  
<http://www.xtarlight.com>  
**Thank you for choosing our excellent products, your satisfaction and feedbacks are the power of our progress.**

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