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VP2

CHARGER INSTRUCTION MANUAL

The name XTAR, derived from "X-STAR", representing the innumerable unknown stars in the universe, brings to mind a vision of infinite imagination. The XTAR logo, a trademark of Hong Kong XTAR Co., Ltd., contains a spheroidal figure and character that together represent the modest spirit of our company, XTAR being tolerant to diversity and our aspirations towards continuing development and innovation.

HONG KONG XTAR CO., LTD

VP2 CHARGER

INSTRUCTION MANUAL

■ Introduction:

- The XTAR VP2 is a professional lithium-ion battery charger with three charge current options and three voltage options, plus a USB power output feature, which also could do the real-time display for battery voltage ($\geq 1.0V$) and battery power. It can charge two 10440/ 16340/ 14500/ 14650/ 17670/ 18350/ 18500/ 18650/ 18700/ 22650/ 25500/ 26650 3.0V/3.2V/3.6V/3.7V/3.8V rechargeable Li-ion batteries simultaneously but independently. With a three-stage charge algorithm, activation of batteries, and real-time detection of battery state, the VP2 charges batteries intelligently and safely.
- The VP2 uses pulse-width modulation (PWM) technology to control a high efficiency DC - DC circuit, which can greatly reduce energy losses while resulting in a more reliable, safe, and efficient charger. In addition, the VP2 provides reverse-polarity and short-circuit protection.
- Three charge current options (0.25 A, 0.5 A, and 1.0 A) allow you to choose a suitable charge current to balance charge time with battery lifespan. The VP2 uses a soft-start function, to avoid damage from large charging currents.
- The three voltage options (3.2V, 3.6V, and 3.8V) allow you to choose different charge algorithms based on your battery types. During charging, you can also check out the voltage you selected.
- In addition, with the USB power output feature, the VP2 can use your Li-ion batteries to charge and supply power for your mobile devices, up to a maximum current of 1.0A. In this mode, the VP2 has automatically stop supplying and power indication function.

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■ Specifications:

• Charging Parameter:

Input		12.0V DC/1.0A
Charge current options	0.25A CC Current	250 \pm 30mA
	0.5A CC Current	500 \pm 50mA
	1.0A CC Current	1000 \pm 80mA
The corresponding termination voltage for three voltage options	3.2V	3.60 \pm 0.05V
	3.6V	4.20 \pm 0.05V
	3.8V	4.35 \pm 0.05V
	TC of 0.25A/0.5A	\leq 50mA
TC of 1.0A	\leq 80mA	
Restart Charge automatically	3.2V Voltage Gear	3.3 \pm 0.15V
	3.6V/3.8V Voltage Gear	3.9 \pm 0.15V
Voltage Display Precision		\pm 0.03V
Operating Temperature		0-40 $^{\circ}$ C

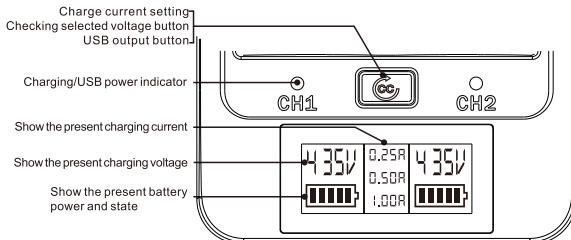
• USB Output Parameter:

USB Output Voltage	5.0 \pm 0.3V
Max USB Output Current	1000mA
Battery Over-discharge Protection Voltage	3.0 \pm 0.2V

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■ Performance:

- Charging rate:
 - "0.25 A": Constant charging current 500mA.
 - "0.50 A": Constant charging current 1000mA.
 - "1.00 A": Constant charging current 2000mA.
- LCD display and LED indication:



• The charging state and battery power indication:



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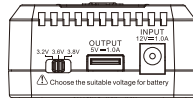
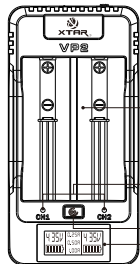
- When the battery voltage reach to the next stage, one more bar will be added to the battery Level icon. No battery level icon display in the corresponding channel when the charger is in one of the following conditions:
 - a. No battery is placed in the channel;
 - b. Short circuit;
 - c. Battery voltage < 1.0V;
 - d. Battery is reversed or poorly connected (no charging).
- Charging LED indicator:

Status	LED Indication	
Charger being Self-check	Red (2 seconds)	
Charger being Standby	Green	
Battery being activated	1.0V - 2.0V	Red
	<1.0V	Green
Being charged	>50%	Red
	Fully charged	Green
USB Output Power Indication	25% - 50%	Red
	5% - 25%	Flash Red
	<5%	Off

- The different battery type will exist deviation between the value on the indicator and battery's actual capacity. In addition, when the battery is in charging, LCD shows the battery's charging voltage (including the voltage generated by the battery's internal resistance). When the battery is out of charging or full charged, LCD shows no-load voltage of the battery.

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■ The VP2 Charger



■ Usage

Before charging batteries, check that the battery types are compatible with the VP2, and then determine the suitable charge current and voltage settings for them.

Note: Damage can occur to the batteries and charger if incompatible batteries are inserted, or if improper charge current and voltage settings are selected.

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- When the battery is fully charged, the VP2 stops charging, and the status indicator turns green. LCD bars will not be added again. It is recommended that you remove batteries from the charger once charging has completed. If batteries are left in the charger after charging completes, the charger will automatically restart the charge cycle when the voltage drops below 3.9 V or 3.3V, based on the chosen voltage setting for.
- During the charging, press and hold the charge current setting button 1.5s to open or close the LCD. LCD is default open.

● USB power output mode:

- Ensure that the VP2 is not connected to any power source. Insert a battery($\geq 2000\text{mAh}$) into the CH1 slot, being careful to insert it with the correct polarity, then press and hold the button for 1.5 seconds to start the USB power output function. After the LED indicator turns green on, you can connect an external device to the USB port. In USB output mode, LCD is invalid.
- When finished using the USB power output, disconnect the external device, press and hold the button for 1.5 seconds to switch off the USB power output, and then after the status indicator extinguishes, remove the battery.
- When battery capacity is above 50%, the LED indicator is green; when capacity is 25%-50%, the LED indicator is red; when capacity is 5%-25%, the LED indicator flashes red.
- When the battery capacity is very low 5%, the USB power output automatically switches off.

■ Note:

- The VP2 is for use only with 3.0V/3.2V, 3.6V/3.7V, 3.8V rechargeable lithium-ion or LiFePO4 batteries. Attempting to charge other battery types may be hazardous, and can damage the batteries and charger.

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■ Warranty:

- 15 days free replacement. We will repair or replace a charger within 15 days of purchase if it is afflicted with 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, customers 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 of the purchase date, we will charge for parts. The total repair fee will assess according to the cost of the replaced materials. If charge to the charger is grave, XTAR will contact distributors with a quote who should contact the customers to decide whether to exchange the parts or not. Freight should be paid by distributors or customers.
- (This warranty is not applicable for damages cause by artificial damage or intentional force.) it still in activation state. When the battery voltage over 1.5 V, the charger can display the real-time battery voltage, and when the battery voltage is between 1.5 V and 2.0 V, the battery icon will flash, indicating that the battery is in activating. Because of the difference of the battery quality, discharged times, capacity and discharge degree, its activation time will be different, and some of the over discharged battery cannot be repaired.
- The charger has three optional current to choose, users can choose different charging current based on the battery's performance in order to achieve slow charging, medium speed charging or the quick charging. For low capacity's battery, our suggestion is to choose 0.25A gear to charge, it can make the battery saturate and benefits to its service life.
- This product only apply to 3.6 V or 3.7 V rechargeable lithium ion battery. Please do not charge the batteries which are unsuitable, otherwise may lead dangers.
- Please keep this product away from water and dust, and use it in dry environment.
- Disassembly and modification are strictly prohibited.

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● Charging Batteries

- Connect the supplied power adaptor to the VP2. The VP2 performs a self-check, turning on two LEDs (Red status indicator). When the charger is being self-checking, LCD display the full bar to the battery icon and the selected voltage. After about two seconds, the two indicators turn green. Then the charger switches to standby mode, no battery icon will be displayed but the selected voltage and default 0.25A charge current.
- Slide the voltage setting switch to choose the suitable voltage for your battery. The LCD will display the corresponding selected voltage. For example, if your battery's nominal voltage is 3.6V/3.7V, then you should choose the 3.6V voltage and LCD display 3.60V in the standby mode.
- Choose the charge current that best suits your rechargeable Li-ion batteries:
 - 0.25A: suitable for 10440-18700 Li-ion batteries;
 - 0.50A: suitable for 18700-26650 Li-ion batteries with capacity $\geq 2500\text{mAh}$;
 - 1.00A: suitable for Li-ion batteries with capacity $\geq 2000\text{mAh}$, 1.0A is the large charge current for fast charging.
- Press the Charge current setting button one or more times to change to a different charge current. Current arrangement is 0.25A-0.5A-1.0A-0.25A.
- During charging, double-press the current-change button to check the selected voltage setting. The corresponding slot LCD display the selected voltage. Choose the voltage setting suitable for your battery. After about 3 seconds, the LCD reverts to show the charge current, battery real-time voltage and charge status.

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- The VP2 has integrated short-circuit protection to protect the charger if a short circuit occurs in a battery. Note that this short-circuit protection protects the charger; it does not prevent batteries from short-circuiting internally.
- Keep the VP2 away from water and excessive dust.
- Do not disassemble the VP2; damage may result.
- Do not use any damaged VP2.

■ Tips:

- The USB power output is available only when no external power source is connected, and battery is being insert to CH1 slot.
- Press and hold the charge current setting to check the selected voltage. Suitable voltage is strongly being recommended.
- Because of different battery types, capacities, and over-discharge depths, the battery-revive time may vary; heavily over-discharged batteries may not be able to be revived.
- Don't judge the battery is being charged or not when it is in the process of activation.
- To lengthen the over-discharged or long time no used battery lifespan, 0.25A charge current and suitable voltage are strongly being recommended.
- Specifications and features are subject to change. You can find the most recent description and specifications of the VP2 on the XTAR website.

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■ Website and Anti-fake inquiry:

- Welcome to visit our company website to get more information.
www.xtarlight.com
- Anti-fake inquiry: A group of eighteen-digit number could be gained by scraping the anti-counterfeiting label on our product or package. Then, input it to the corresponding query window in our service column of our official website to distinguish the product's authenticity. The serial number does the same work.
- Thank you for choosing our excellent products, your satisfaction and feedbacks are essential to our progress.



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