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USER MANUAL (EN)

Universal battery charger

POWER-ON

In the shutdown state, press the knob to turn on, the nixie tube will flash to display the output voltage and current saved last time. After 5 seconds, it will start to output and enter the main interface to display the real-time output status of the current voltage and current.

Note: the red number represents the output voltage, and the green number represents the output current.

PAUSE AND SHUTDOWN

1. Pause: in the standby screen, press the knob once, the CL indicator light will be on, and the red number will display the battery voltage and off (as shown in the figure above), and then the power supply will be suspended.

2. Shutdown: in the pause screen, press and hold the knob until the power is turned off.

Note: in the pause screen, the red number represents the battery voltage, and the green off represents pause.

Press and hold the knob in the pause screen to turn off the machine. In the standby screen, holding down the knob for 3 seconds is to lock the green.

LOCK SCREEN AND UNLOCK



1. Lock screen: in standby mode, press and hold the knob for more than 3 seconds to display the closed running lamp pattern as shown in the figure below, indicating that the screen has been locked.

2. Unlock: when the screen has been locked, press and hold the knob for more than three seconds to display the pattern of opening the lantern as shown in the figure above.

SETTING VOLTAGE



Turn the knob, as shown in the figure above, until the red voltage value flashes. Press the knob once to enter the output voltage value setting. Turn the knob to change the value, and then press the knob to save and exit.

White "-" represents: 9 groups of user-defined voltage and current access menu entry.

Red number represents: set voltage value.

Green number represents: set current limit (maximum charging current value).

Note: after entering the setting, if there is no operation within 5 seconds, it will automatically cancel the operation and exit the setting.

SET CURRENT LIMIT (MAXIMUM CHARGING CURRENT)



Turn the knob, as shown in the figure above. When the green current value flashes, press the button once to enter the current limit setting. Turn the knob to change the value, and then press the knob to save and exit.

Note: after entering the setting, if there is no operation within 5 seconds, it will automatically cancel the operation and exit the setting.

ACCESS OF VOLTAGE AND CURRENT VALUE



1. Storage: according to the fourth and fifth methods, first set the voltage and current, and then turn the knob, as shown in the figure above. When the white horizontal bar flashes, press and hold the knob for more than 3 seconds (important thing said three times: hold the knob for more than 3 seconds, hold the knob for more than 3 seconds, and hold the knob for more than 3 seconds) to enter the storage menu. The storage position can be selected from 1 to 9, A total of 9 groups of pre stored voltage and current values can be saved. After selecting the storage location, press the button to save and exit.

2. Read: turn the knob, as shown in the figure above. When the white horizontal bar flashes, press the knob once to enter the reading menu. The preset position can be read. Select 1 to 9. After selecting the pre stored value, press the knob to read the pre stored value and set the output voltage and current value
Note: when the white bar flashes, to enter the storage menu, press and hold the knob for more than 3 seconds. To enter the read menu, press the knob once.

THREE STAGE CHARGING FUNCTION (FLOATING CHARGE FUNCTION)



Turn on or off the three-stage charging. The white circle on the left is the function switch. When the white circle flashes, press the knob to turn on or off the three-stage charging function. The white circle on the top represents: turn on the three-stage charging function. The white circle below represents: turn off the three-stage charging function.

Parameter setting



The red number represents the float voltage. This float voltage does not need to be adjusted manually, and the floating charge voltage will automatically change to 93% of the charging voltage every time the charging voltage is adjusted.

For example, if the charging voltage is 14.8V, the floating charging voltage is $14.8 \times 0.93 = 13.8V$.

The green number represents the jump current value. This jump current value (commonly known as the turn lamp current) will be automatically set to 30% of the charging current value. When the real-time output current of the power supply is greater than the jump current, the output voltage is the equalizing charging voltage, otherwise the output voltage is the floating charging voltage. Turn the smoked beef. When the value flashes, press the knob once, and then turn the knob to change the value.

Note: if there is no street battery or the charging current is less than the jump current value, the output voltage of the charger is the floating charge value, not the setting output voltage value.

CHARGING POWER STATISTICS FUNCTION



Turn the knob to the menu shown in the figure above. Press the knob once to turn on or off the charging power statistics function.

The white circle on the left is the rotation display switch of charging capacity.
 The white circle on the top represents: the ah number of voltage and current remaining charge is displayed in the main interface.
 White circle below represents: voltage and current are displayed in the main interface.
 Chang'an knob can check the number of ah that has been charged, and will not open or close.

DISPLAY THE STATISTICS OF THE POWER THAT HAS BEEN CHARGED IN THE LAST POWER ON



After the charging power statistics function is turned on, this menu (as shown in the figure above) saves the ah number that has been charged in the last time (this record will be automatically covered by each shutdown). Long press the knob to view the ah number that has been charged last time.

AUTOMATIC SHUTDOWN FUNCTION



The figure above shows the menu entry of automatic shutdown function (i.e. full shutdown function). The white circle on the left is the function switch. When the circle flashes, press the knob once to turn on or off the automatic shutdown fiction.
 White circle on behalf of: turn on automatic shutdown.
 The white circle represents below; turn off the automatic shutdown.
 Press the knob once to enter the next setup menu.



The white flashing circle in the figure is the function switch. When the white circle flashes, press the knob once to turn on or off the automatic shutdown function.

The red number represents the number of minutes of delayed shutdown.

The green number represents the shutdown current value.

As shown in the figure above, when the charging output current is less than 1a, you will be automatically hung up in the countdown of 0 minutes.

Note: when the output current is less than the shutdown current, start the countdown and automatically shut down. In the countdown process, if the output current rises to greater than the shutdown current, the countdown will be cancelled and the time will return to zero. When the output current is lower than the shutdown current, start the countdown again.

After the countdown is over, the power supply will be switched to off pause state first, and then officially shut down after 10 seconds delay.

CHARGING METHOD

1) Before connecting the battery, you need to adjust the charging voltage and charging current, and the voltage displayed after connecting the battery is the actual charging voltage.

2) The charging voltage value shall be calculated according to the number of battery strings and the full charge voltage of a single battery.

Battery string number x full charge voltage value of single battery = charging voltage value of battery pack
 For example: 16 series lithium iron phosphate battery, the charging voltage is 16 * 3.65v = 58.4v.

Note: the full charge voltage of a single Fe Li battery is 3.65v, that of ternary lithium battery, polymer lithium battery and lithium titanate battery is 4.2V and 2.7V respectively.

3) The charging current should be set according to the battery type, charging mode and the over-current capacity of the battery protection board. Refer to the following list for petting.

	Standard charging current	Fast charging current
Lithium titanate battery	0.2C--0.7C	1C
Li-ion battery	0.2C--0.7C	1C
Polymer lithium battery	0.2C--0.7C	1C
Lifepo4 battery	0.2C--0.7C	1C
Lead acid battery	0.1C--0.3C	Can not fast charging

Note: C represents the capacity of the battery

For example, for a lithium battery with a capacity of 50ah, the calculation method of the standard charging current is as follows: 0.2x50AH=10A 0.7x50Ah=35A.

The standard charging current is 10A – 35A.

MATTERS NEEDING ATTENTION

1. When charging, the positive and negative output cannot be reversed, and it will be damaged. If the charger is damaged due to the positive and negative output connection, it is not covered by the warranty, and the maintenance shall be charged separately.
2. If you tear up the warranty label without permission, the warranty will not be given.
3. Due to y capacitor grounding (case), the power supply generally has slight leakage, and the leakage current is generally less than 10mA. Its standard conforms to en / ul60950 safety regulation standard, so it will not cause electric shock to human body, but it will feel numb when the human body is sweating, wet and barefoot. Generally, the best way to solve this problem is to use the case or input power line.
4. The output voltage and current of the power supply are very large, so the user must have some common knowledge of electricity use, and then charge and use it after being familiar with it. Due to improper operation, or improper adjustment of voltage and current, battery overcharge, charging drum, damage and other consequences shall be borne by ourselves.
5. All batteries in series must be charged with protection board. If not, individual batteries will be overcharged. Therefore, the battery will be overcharged, bulged and damaged at your own risk.
6. When charging with low voltage and high current, the charger has the function of voltage compensation. The voltage will automatically increase by a few tenths of a volt according to the size of the current, and the voltage will drop automatically when the battery is fast charged.
For example: when petting 3.6V charging, the voltage displayed during charging may reach 3.8V, which is normal.

CHARGING VOLTAGE QUICK REFERENCE TABLE

	Lithium titanate battery	Li-ion battery	Polymer lithium battery	Lead acid battery
1S	4.2V	3.65V	2.7v	14.4v
2S	8.4V	7.3V	5.4v	28.8v
3S	12.6V	11V	8.1v	43.2v
4S	16.8V	14.6V	10.8v	57.6v
5S	21V	18.3V	13.5v	72v
6S	25.2V	21.9V	16.2v	86.4v
7S	29.4V	25.6V	18.9v	100.8v
8S	33.6V	29.2V	21.6v	115.2v
9S	37.8V	32.9V	24.3v	
10S	42V	36.5V	27v	
11S	46.2V	40.2V	29.7v	
12S	50.4V	43.8V	32.4v	
13S	54.6V	47.5V	35.1v	
14S	58.8V	54.1V	37.8v	
15S	63V	54.8V	40.5v	
16S	67.2V	54.8V	43.2v	
17S	71.4V	62.1V	45.9v	
18S	75.6V	65.7V	48.6v	
19S	79.8V	69.4V	51.3v	
20S	84V	73V	54v	
21S	88.2V	76.7V	56.7v	
22S	92.4V	80.3V	59.4v	

23S	96.6V	84V	62.1v	
24S	100.8V	87.6V	64.8v	
25S	105V	91.3V	67.5v	
26S	109.2V	94.9V	70.2v	
27S	113.4V	98.6V	72.9v	
28S	117.6V	102.2V	75.6v	
29S		105.9V	78.3v	
30S		109.5V	81v	
31S		113.2V	83.7v	
32S		116.8V	86.4v	