Vapcell®

Power, beyond your imagination

User Manual

Model No: BL4

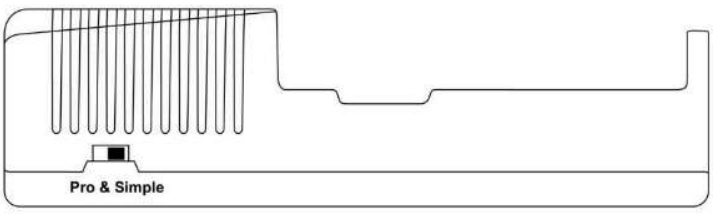
Vapcell BL4 is a universal intelligent fast charging charger that can be charged with almost all cylindrical rechargeable batteries, compatible with sizes ranging from 10440 to 32700,26800 batteries. BL4 can automatically detect li- ion, Ni-Mh, Ni-Cd, and can also be manually selected to charge LiFePO4 batteries, 4.35V li-ion batteries, and 1.5V li-ion batteries. The charge current range of BL4 appliances is from a small current of 50mA to a fast charging current of 3000mA, with a very complete range of current levels. The charger has multiple modes, including charge, discharge, storage, capacity test, and repair, making it a very professional analysis charger. The four slots are independent of each other and display various parameters of the battery in real-time. BL4 is equipped with simple and professional gear options for users to choose from, ensuring accuracy for multiple battery types. This is a professional charger, please read the instruction manual carefully before use.

1. Function Description:

1.1 Simple & Pro button

1.1.1 Simple button

Simple mode is only suitable for charging li-ion 4.2v batteries and Ni-Mh Ni-Cd batteries If there are not many types of batteries, it is recommended to use this mode. And with fewer current levels, the selection is simpler. The chip will automatically recognize whether it is li-ion 4.2v and Ni-Mh Ni-Cd, and then charge it. Please refer to the charger parameter table below for the current level of the simple mode.

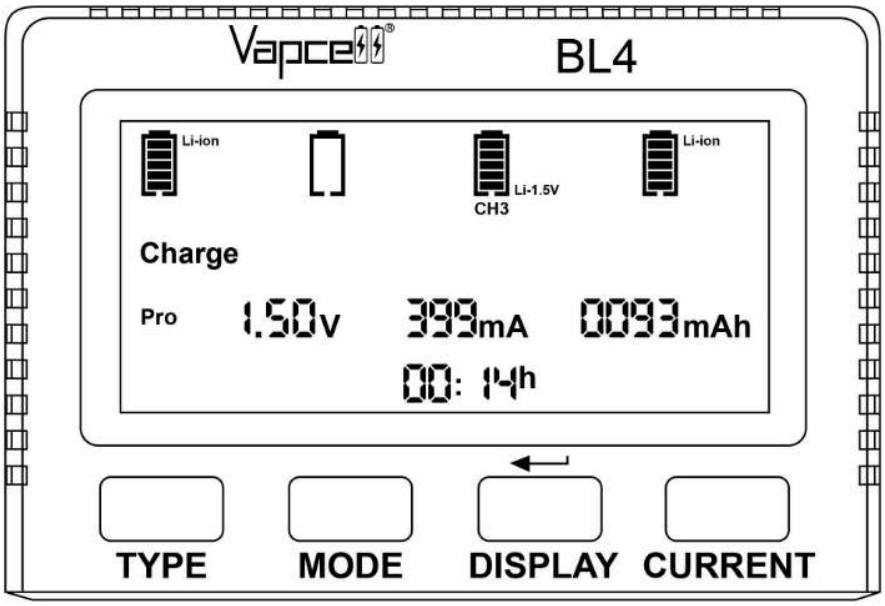


1.1.2 Pro button

The pro mode can charge 5 types of batteries, Li-ion 4.2V/LiFePO4 3.2V/NI-Mh Ni-Cd 1.48V/Li-ion 4.35V/li-ion-1.5V. Users need to choose the correct battery type.
The difference from Simple mode is that after selecting the battery type, you must press and hold the DISPLAY button for 2 seconds to enter the charging program, otherwise it will not charge.
If there is poor power supply contact or if power is restored after a power outage, the charging program will not start and must be long pressed DISPLAY button to continue charging. This can ensure safety, such as charging LiFePO4 batteries to 4.20V, to prevent battery explosion or damage to battery performance.

1.2 Type Button

Press to select the type of battery (Li-ion 4.2V/LiFePO4 3.2V/NI-Mh/Cd1.48V/Li-ion 4.35V/li-ion-1.5V), there are a total of 5 types of batteries. when inserting the battery. it will begin to charge the battery after fixing the battery type. Please noted that it can automatically identify Li-ion and Ni-Mh, no need to choose manually. but BL4 can't automatically identify Li-ion 4.20V/Li-ion 4.35V/LiFePO4/li-ion-1.5V battery, these battery types need to be manually selected. If you don't choose manually, the system will choose Li-ion 4.2V by default, so be sure to choose the type of battery. Choosing the wrong battery type can be very dangerous and can lead to battery damage or even explosion !

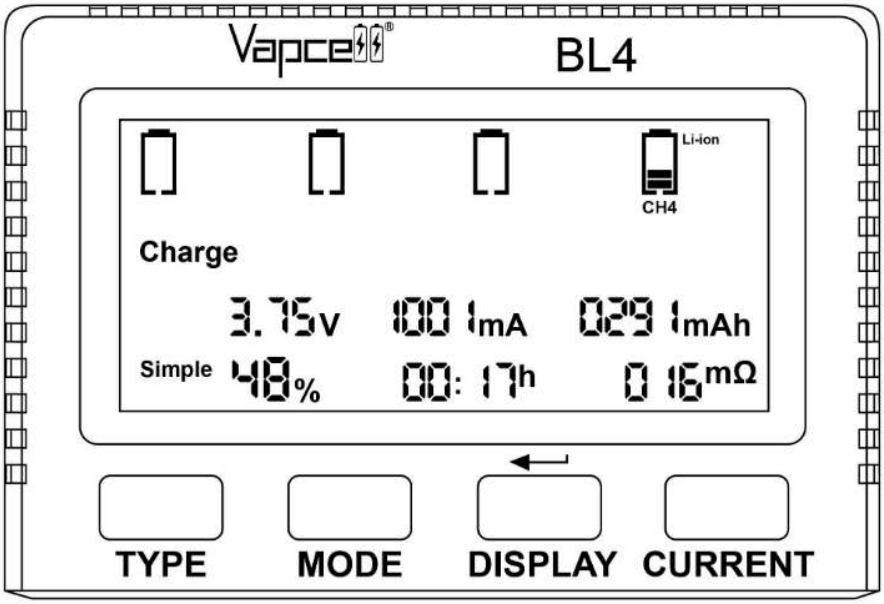


1.3 Mode Button

The mode has five functions: Charge, test, Storage, Discharge, and Repair.
Default charge mode in program design. Press on the MODE button to select other functions.

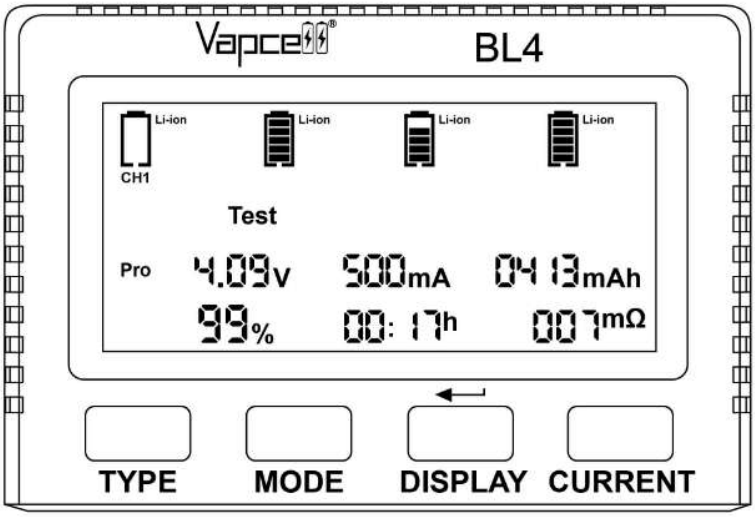
1.3.1 Charge

The system automatically determines the type of battery, recharges Li-ion batteries or Ni-Mh, Ni-Cd batteries.
Li-ion and LiFePO4 batteries are charged in CC CV mode and Ni-Mh, Ni-Cd batteries are charged by -dV/dt mode. When fully charged, the charge current will be cut off.



1.3.2 Test

Test stands for Capacity Testing**,** similar to Discharge mode, but more intelligent to test battery capacity. There are three steps in this mode: Charge-Discharge-Charge.
The charger full charges the battery first, then discharge at a constant current to the cut-off voltage, the charger shows the capacity of the battery, then the charger fully charge the battery again. The charged battery capacity will not be displayed on the screen, replace capacity with ---- on LCD screen.
The charge current can be manually selected, and the discharge current is automatically allocated based on the internal resistance of the battery. Suitable for forgetful or busy users who cannot wait to operate multiple programs to obtain battery capacity.



1.3.3 Storage

In order to increase the cycle life of li-ion batteries, the new version has added storage mode. There is evidence that controlling the battery level to around 50% for storage will increase the battery's lifespan. There is a discharge and charging process in the storage mode. When the initial voltage of the li-ion battery exceeds 3.70V, It will discharge to 3.70V and stop. If the initial voltage of the battery is lower than 3.70V, it will be charged to 3.70V.The charge and discharge current is 500mA.
After the storage program is completed, the battery voltage will be around 3.7V.

1.3.4 Discharge

This function can test the capacity of batteries.
First, fully charge the battery and then start the Discharge mode. Refer to the battery datasheet to select the appropriate discharge current,BL4 will discharge a constant current to the cut-off voltage and then end. It can discharge at any time with any battery above the cut-off voltage.

The discharge capacity shown after discharge refers to the current capacity of the battery. For example, if a fully charged battery is discharged at 500mA and takes 4 hours to complete, then the capacity of the battery is shown to be 500 mA*4 h=2000 mAh.
if want to get the full capacity of the battery, please fully charge the battery then discharge.

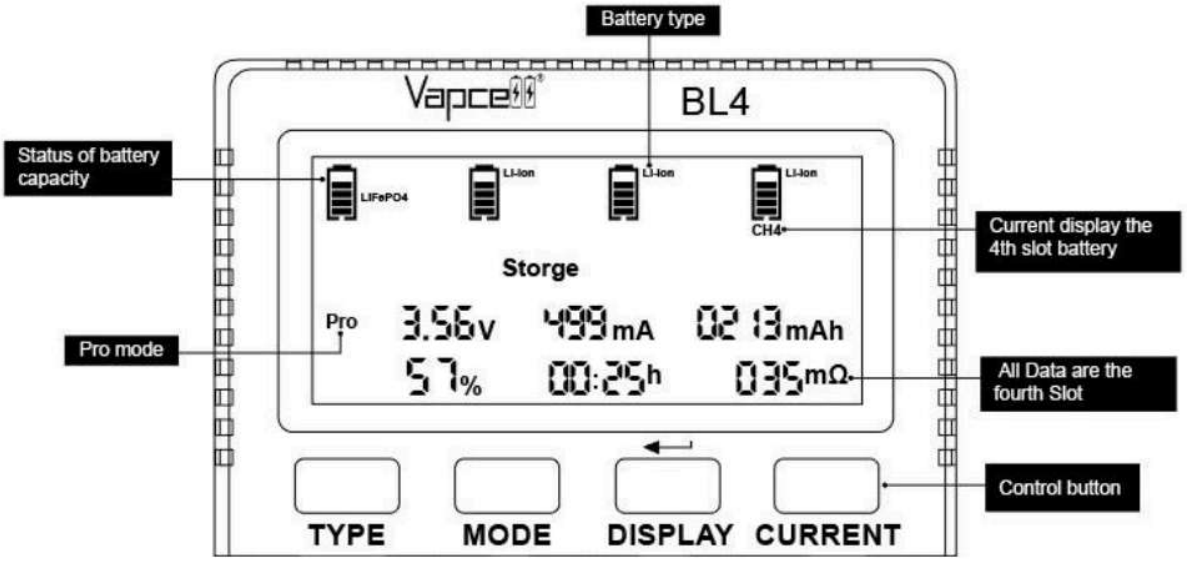
1.2.5 Repair

This function is used to repair li-ion batteries and Ni-Mh, Ni-Cd batteries
When the over-discharge voltage of li-ion batteries is less than 2.5V, or the over-discharge voltage of lithium batteries with PCB is lower than the cut-off voltage. The charger is activated to charge with a small current, and the li-ion battery can continue

to be used.
There is memory effect in some Ni-Mh, Ni-Cd battery. The charger can refresh the battery and reduce the memory effect through repeated charging and discharging cycles.

1.4 DISPLAY Button

Used to display all parameters of a single slot, press DISPLAY again to display all parameters of another slot. Real time display of battery voltage, internal resistance, mA, mAh, Wh, time, capacity percentage.
Another function is to confirm the battery type in pro mode by long press the DISPLAY button and then Activate some modes program. ← this symbol indicates entering the program.



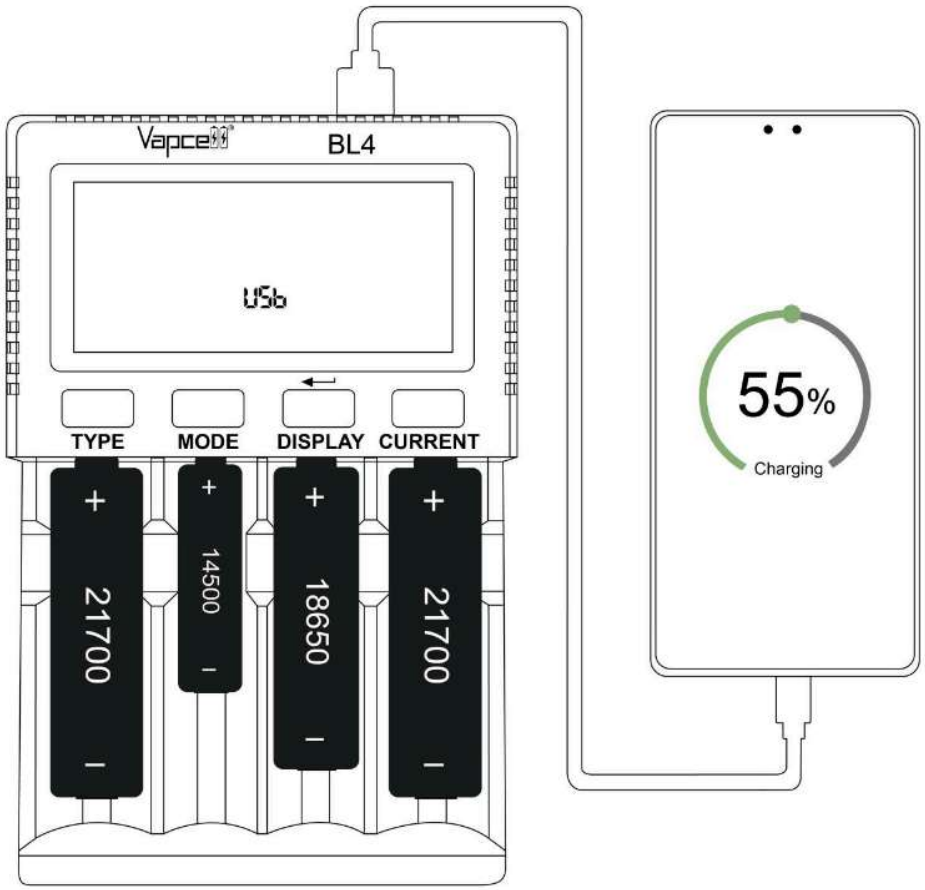
1.5 CURRENT Button

Put the rechargeable battery into the first slot. The lithium-ion battery is charged with a default current of 3000mA, and the current is flashing to remind the user to adjust. If another lithium-ion battery is placed in another slot, the 3000mA of the first slot will intelligently decrease to 1000mA or 2000mA. BL4 can output a maximum charging current of 1 * 3A, 2 * 2A, 4 * 1A. Please refer to the table below for specific battery types and current levels of each slot.
There are many current levels for BL4, users need to refer to the battery specification sheet to choose the appropriate current. When the charging current selected by the user is too high and exceeds the charging current standard of the battery, the BL4 built-in chip will detect the internal resistance of the battery, automatically reduce the charging current, and protect the battery life and safety.
Pay attention to li-ion 1.5V constant voltage batteries, as they include various processing methods on the market, BL4 is compatible with various li-ion 1.5V batteries, and the

charging current cannot be manually selected. The charging current is matched according to the battery protection board with built-in chip program, with a maximum of 500mA charge current.

1.6 USB out put

BL4 provides USB power supply function, which can be used as a power bank to power various daily devices, such as mobile phones, flashlights, and so on. Before using this function, it must be cut off the 12v 5A power supply. When using, it is necessary to insert li-ion battery with the highest possible voltage, one or more batteries, the chip will intelligently calculate the use of a higher voltage battery first, and then the voltages will be supplied together .cut off the power input, and see the USB word on the display screen indicating that USB mobile power function activated. At this time, a USB data cable can be used to power various devices.
Default power supply DC 5V 1A, max 5V 2A.



2. Parameters and Features

1) Parameters:

Input	QC 3.0 9V2A
USB Output	DC 5V 1A, MAX 5V 2A
Output Voltage	DC 4`.2V±1%/DC 1.48V±1%/DC 3.65V±1%/DC 4.35V±1%/DC 1.5V±1%
Output Current	Li-ion&LiFePO4(1*3Afor slot 1st,2*2A for slot 1st and 4th,4*1A Max) Ni-Mh/Cd &Li-ion 4.35V (2*2A slot 1st and 4th,4*1A Max) Li-ion 1.5V (4*0.5A Max)
Simple mode charge current option （Li-ion）	250mA/500mA/1000mA/1500mA/2000mA/2500 mA/3000mA
Simple mode charge current option （Ni-Mh Ni-Cd）	250mA/500mA/1000mA/1500mA/2000mA
Pro mode charge current option （Li-ion&LiFePO4&Li-ion 4.35V）	50mA/100mA/150mA/250mA/500mA/750mA/1000mA/1500mA/2000mA/2500mA/3000mA
Pro mode charge current option （Ni-Mh Ni-Cd）	250mA/500mA/750mA/1000mA/1500mA/2000mA
Pro mode charge current option （Li-ion 1.5V）	Auto, 500mA max
Simple mode discharge current option（Li-ion）	250mA/500mA
Simple mode discharge current option（Ni-Mh Ni-Cd）	250mA/500mA/1000mA
Pro mode discharge current option （Li-ion&LiFePO4&Li-ion 4.35V）	100mA/200mA/300mA/400mA/500mA
Pro mode discharge current option （Ni-Mh Ni-Cd）	250mA/500mA/750mA/1000mA
Compatible With :（Battery Dia:Φ10-32mm; L:34-82mm）	
Li-ion&LiFePO4	10440/14500/16340/16650/17500/18350/18490/18500/18650/20700/20650/21700/ 22650/ 26500/26650/26700/26800/32650/32700
Ni-Mh Ni-Cd & li-ion 1.5V	AAA, AA, SC, C, D
Package Content	Charger, Line, Manual
Notes ： Batteries are excluded	

Please check the voltage of some other programs.

Battery type	Discharge Cut-off Voltage	Storage voltage
Li-ion	2.55V	3.70V
LiFePO4	2.0V	3.20V
Li-ion 4.35V	2.75V	3.80V
Ni-Mh Ni-Cd	0.9V	1.20V
Li-ion 1.5V	no	no

Please note that Li-ion 1.5V battery only has charge function, no other functions.

2) Features:

- Real time display of battery charging current and other parameters
- USB output to charge mobile phone and other devices.
- Top surface has a button top type feature to make contact in recessed battery.
- Sliding chute is long enough for 26800, 32700 size, including button top or PCB 21700 batteries.
- There are Simple and Pro modes, targeting different users.
- It is compatible with most commonly used rechargeable batteries on the market.
- Wide range of charging currents from 50mA to 3000mA.
- In Pro mode, it is necessary to confirm the battery type before charging to prevent poor contact or power outage. Other batteries should be charged with li-ion 4.20V by default to protect battery safety
- Automatic low current activation repair for low-voltage batteries.
- It is automatically able to identify li-ion, Ni-Mh, but you need to press the Type button to select the 3.2V lifepo4, li-ion 4.35V and li-ion 1.5V battery.
- Charging protection and protection of polar reverse. Also, it can detect a broken battery.

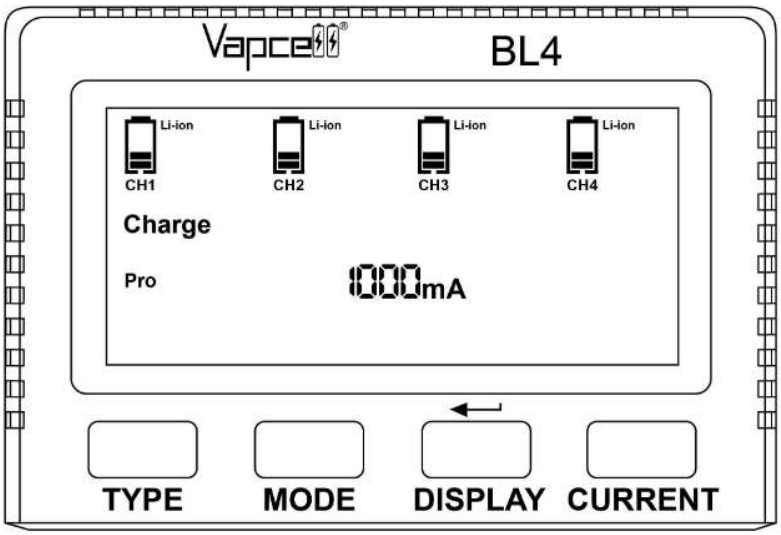
3. Operation

3.1 Connect the charger and use our 9V2A adapter to supply power, at this point, the display screen lights up. NULL appears in the center of LCD screen.
3.2 Select the Simple or Pro sliding switches on the left side of the charger. If the simple mode is selected, the charger automatically recognizes the battery type of li-ion and Ni-Mh/Cd , selects the appropriate current, and then enters charge or other modes. There are 5 types of battery cells in the Pro mode, and there are more current levels, we follow the Pro mode operation instructions.
3.4 Insert a battery into a slot, such as the first slot, if the battery is reversed, “Err” will be

prompted in LCD screen. Users put the battery correctly into the charger. Assuming that it is placed in the first slot, CH1 characters will appear on the display screen. Charger will automatically determine whether the battery is li-ion or Ni-Mh, Ni-Cd, and it's displayed on the screen.

Put the battery into the first slot, and at this time, the battery type, mode and current are flashing, reminding the user to change. If it is a Ni-Mh/Cd battery, it cannot be changed to another battery type. Users must accurately know the battery type and press the TYPE button to select the correct battery type, press the button mode to select the desired mode, select the appropriate current according to the battery specifications by pressing the current button. Then press and hold the DISPLAY button, the charging will start.

If operating the same battery type, two slots have a common mode. In simple mode, placing one battery and a second battery within 5 seconds, or in professional mode, placing two batteries, or placing two batteries in a charger and then turning on the power, common mode will appear. Look at the picture below, CH1, CH2, CH3 and CH4 flash simultaneously, mode and the battery type and current also flash. At this time, the battery type, charging current, and mode of two or more batteries can be adjusted simultaneously. the customer uses a common mode, need two or more batteries with the same battery type and similar battery parameters. If a common mode is not required, Press the display button will exit the common mode, at this point, many parameters of a single battery will be displayed, allowing for parameter adjustment of individual batteries.



3.5 The user wants to test a LiFeO4 battery, the user has placed a battery in the first slot, and the CHI battery type, mode and current are flashing. The user selects the LiFeO4 battery type and test mode, current, and then long press the DISPLAY button to enter the test program. Pay attention to operating multiple batteries. If you find that the battery parameters of a certain slot are still flashing, it means that the battery of this slot has not entered the program. You need to press the display button to go to this slot, select various

program parameters, and then long press the DISPLAY button to start

3.6 Waiting for the completion of the testing program, the display screen will also turn off. If the user wants to turn off the display screen, long press the CURRENT button to turn off the display screen. After the operation is completed, it is necessary to promptly remove the battery from BL4.

4.Precaution

- Indoor condition only.
- Please use an adapter with sufficient power, otherwise, the adapter cannot supply power to all slots, which may result in power failure, restart, and data loss.
- Don't take apart your charger.
- Keep it dry when you don't use it.
- Please don't charge leakage, corrosion or dead battery
- Please remember to cut off the power when you don't use
- Please read these instructions before use; please use the appropriate charging current,
- Please cut off the power supply and remove the battery from the charger when program is complete.
- The data of BL4 charger is for reference only. The difference in charging capacity data obtained from subtle charging currents, such as current levels below 250mA, may be significant due to the presence of positive and negative tolerances in the current. Please refer to professional instrumentation if you need accurate data.
- Please cut off the power when you clean the charger.
- Don't repair yourself. Please contact the professional maintenance person when you need.
- Please make sure the correct program and setting are chosen and set. Incorrect program or setting may damage the charger or case-fire or explosion
- Do not misuse in any way! Use for intended purpose and function only.

5.Warranty Service

After sales warranty service is only for the products purchased from authorized sources, this rule is compliant to all products

products have after-sales warranty service.
In the purchase of this product within 15 days, if any quality problems can be asked to the dealer free replacement. In the purchase of this product enjoy one-year free warranty service.

Beyond 12 months, a limited warranty applies, covering the cost of labor and maintenance, but not the cost of accessories or replacement parts.

The free warranty does not apply to the following :

1. Man-made destruction , dismantling, modification of this product
2. Incorrect operation results in damage to the products(such as refitting the battery, putting it into a non-rechargeable battery, or violating the warning)
3. Battery Leakage causes product damage

For the Latest information on Vapcell batteries and services, please contact a local vapcell distributor or send an email to admin@szfyte.com

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