Battery Capacity Tester (Discharge)

Product Manual

HT-DC50ABP

Heltec Energy

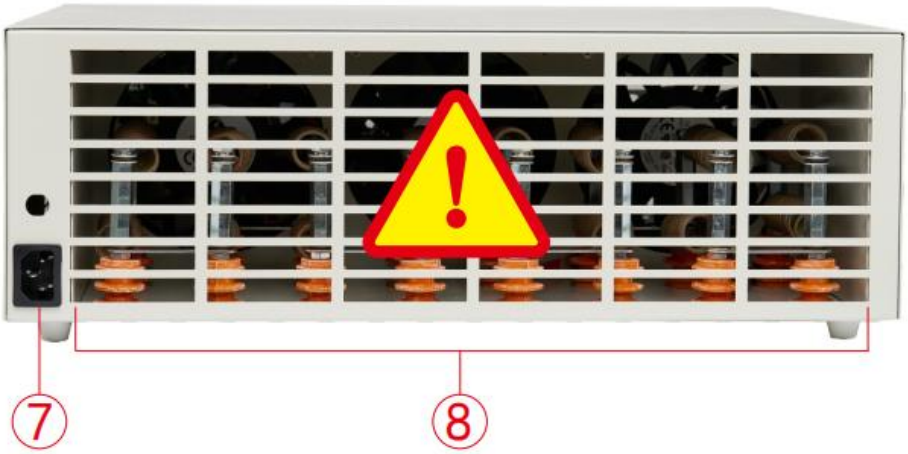
Dear customer

Thank you very much for purchasing this product. The contents of this manual have fulfilled the obligation of reminding and warning according to the safety production law! Before using this product, you must read and understand the contents of the manual carefully! This product is only for professional use, you must know Any operation on the lithium battery is extremely dangerous! Therefore, you must set the machine correctly and reasonably according to the specifications provided by the battery manufacturer. All direct or indirect consequences caused by the use of this product have nothing to do with our company! This product and accessories will be upgraded from time to time without notice.

Product parameters：

Model	**HT-DC50ABP**
Use range	Batteries within 5-120V
Discharge parameters	5-120V Adj (step 0.1V),1-50AAdj (step 0.1A) Max 20A within 5-10V,Max 50A within 10-120V Max discharge power 6000W
Work step	Set voltage/Set capacity/Timed Discharge
Communication	NO
Protective function	Overvoltage/reverse connection/overcurrent/battery high temperature/machine high temperature alarm and protection
Calibration equipment	Standard source(V and A:Gwinstek PCS-10001)
Accuracy	V±0.1%, A±0.2%,The accuracy is valid for one year from thedate of purchase
Heat dissipation method	Forced air cooling and delayed operation for 2 minutes (do not use if the fan does not turn)
Work environment Matters needing attention	This machine uses heating wires to consume electrical energy,which generates a large amount of heat during operation.It is necessary to ensure good heat dissipation and have someone on duty.The temperature at the back air outlet is as high as 90℃,so no flammable,explosive or valuable items are allowed within 1 meter around this machine.
Power	AC110-240V 50/60HZ
Size and weight	Product Size 380*158*445mm, Weight 8.7Kg

Appearance introduction：



① Power switch:During the testing process, the power cannot be turned off, otherwise the test data cannot be saved. After the test is completed, do not immediately turn off the power switch, as the cooling fan will delay working for 2 minutes.

② Encoding switch: Press to enter the settings page, rotate to adjust parameter

③ Start/Stop button: any operation in running state must be paused first

④ External battery temperature probe interface (optional)

⑤ Battery positive input:1-2-3 pin through current, 4 pin voltage detection

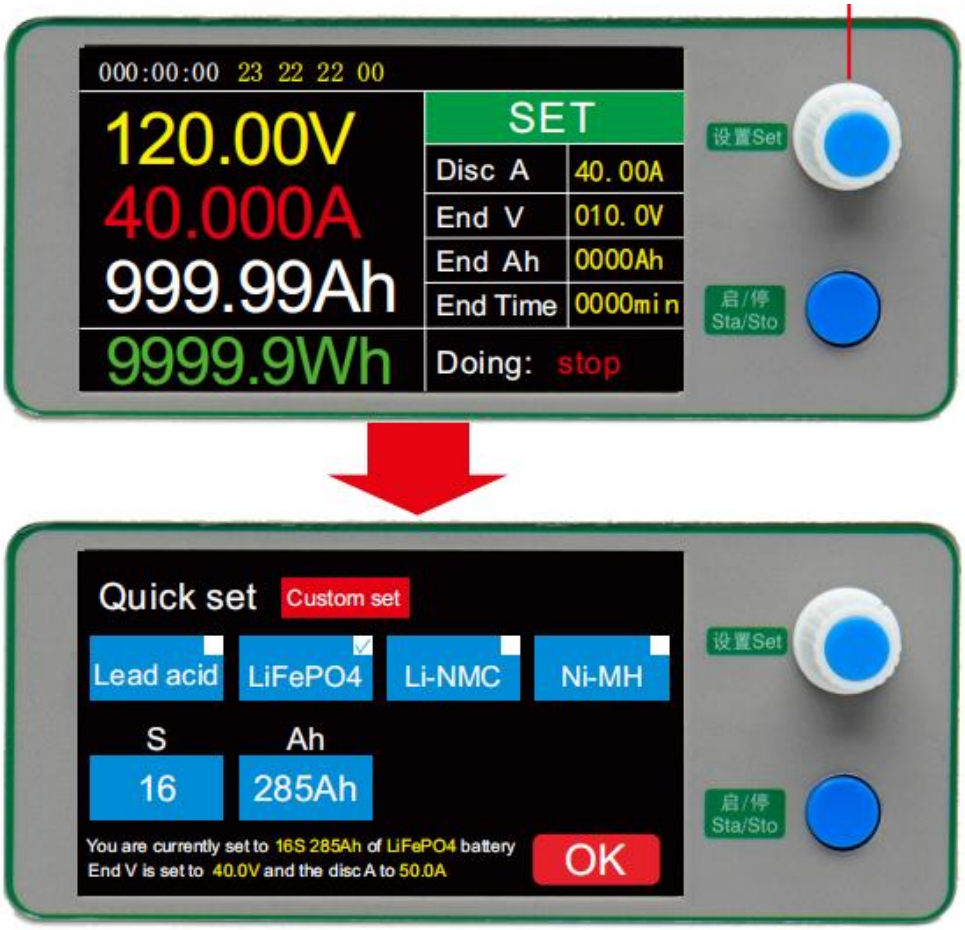
⑥ Battery negative input:1-2-3 pin through current, 4 pin voltage detection

⑦ AC110-220V Power socket

⑧ Air outlet, the highest temperature in this area can reach 90 ℃, and there should be no objects within 1 meter to prevent burns or fires (it is recommended to dissipate heat to the outside facing the window)!

Use method:

1. Turn on the power, clip in the battery, and press the settings knob to enter the quick or custom settings page.



2. Enter this page (rotate left and right to Adj parameters, press to confirm). If you choose custom settings, then proceed to the next page. If you do not want to calculate the discharge cut-off voltage and current, you can select the battery type/string number/battery capacity to be tested on this page and let the system automatically calculate it. The system calculation is based on common cell information (as shown in the table below), which may not be comprehensive or accurate, and requires your careful confirmation.

Single or string of batteries	Lead acid Battery	Ni-MH Battery	LiFePO4 Battery	Li-NMC Battery
Nominal (rated)V	12V	1.2V	3.2V	3.7V
Discharge cut-off V	10V	0.9V	2.5V	2.8V
Discharge A	≤20% of capacity	≤20% of capacity	≤50% of capacity	≤50% of capacity

3. When you select custom settings, you will enter this page where you can set the discharge method as needed.

Discharge A: It is recommended to set according to the battery specification book, generally set at 20-50% of the battery capacity.

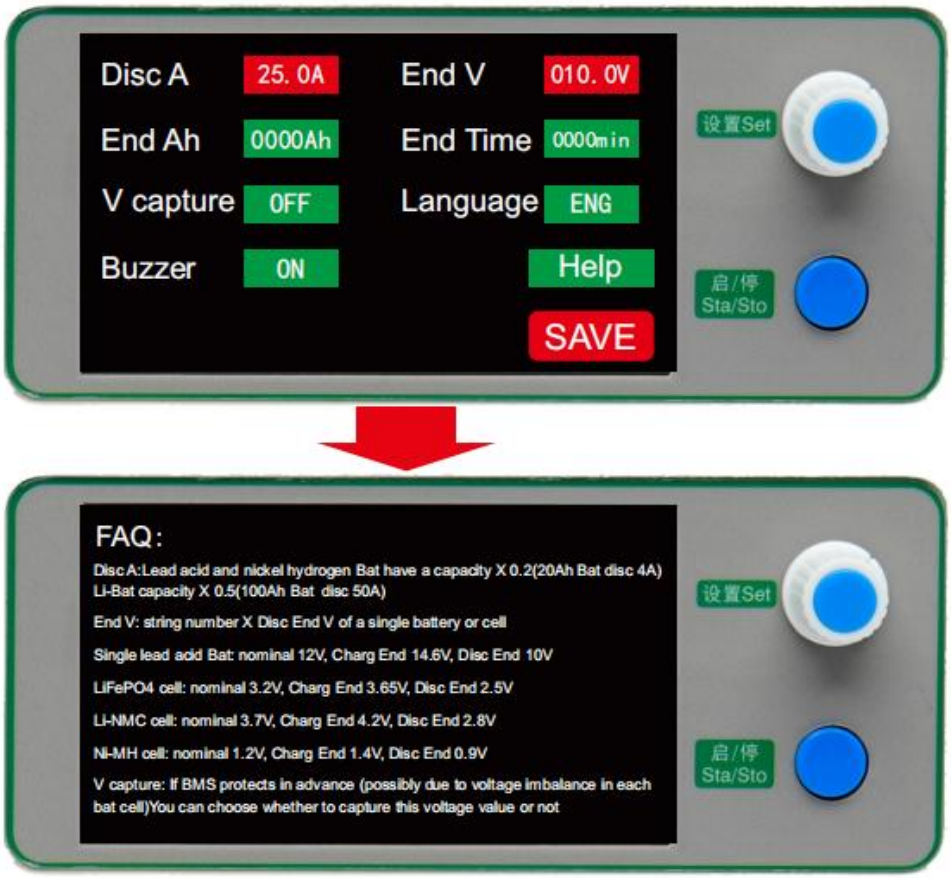
End V: Stop discharging when the voltage is below this level. It is recommended to set it according to the battery specifications or refer to the table above for calculation

End Ah: Set the discharge capacity (set 0000 to disable). If you need to discharge 100Ah, set the End Ah capacity to 100Ah, and it will automatically stop when the discharge reaches 100Ah.

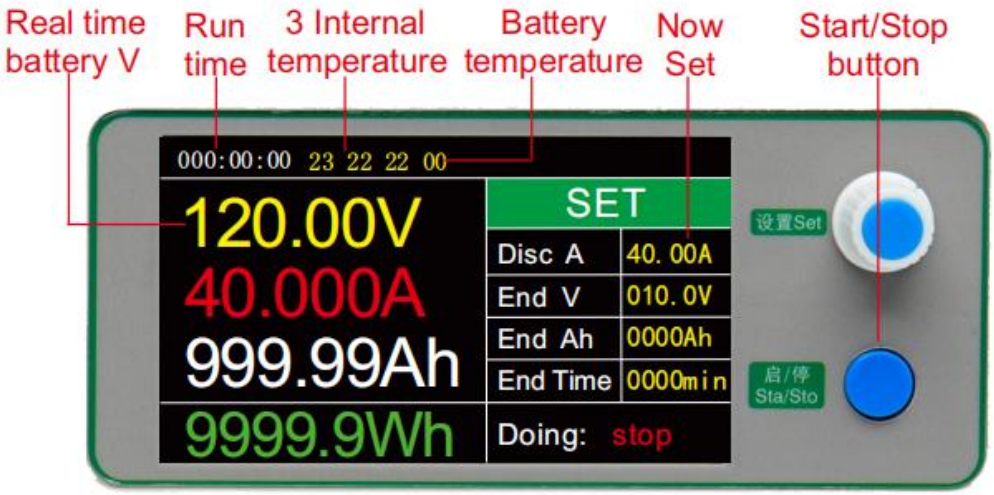
End time: Set the discharge time (set 0000 to disable). If you need to discharge for 90 min, set the deadline to 90 min, and it will automatically stop when the discharge reaches 90 min.

V capture: Whether to capture the battery voltage at the moment of BMS shutdown.

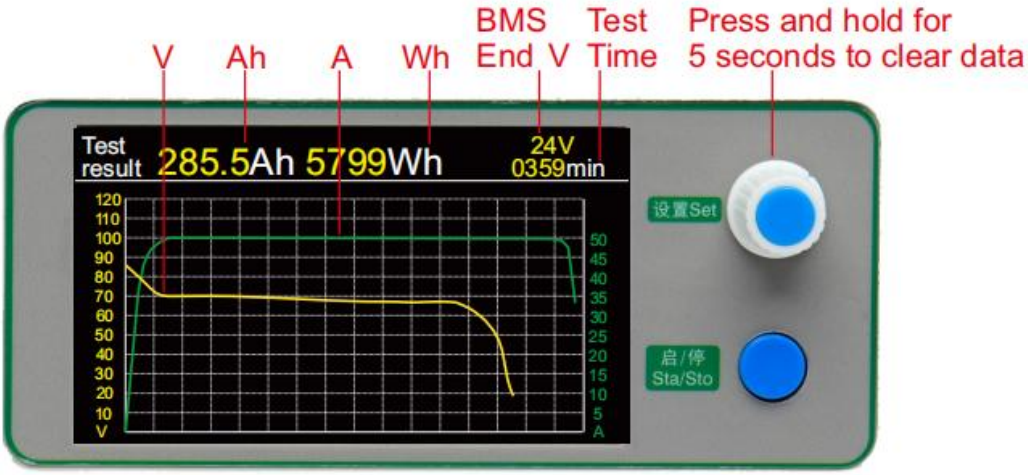
Use help: This page records some common battery cell data that can help you quickly use the product.



4. After setting the above parameters, select Save to return to the main page. On the page you can see the Battery V/Run time/Machine temperature/Current Set. After confirming that they are correct, press the start stop button to start discharging. If you need to pause halfway, press the start stop button again (but do not turn off the power). If no one operates within 3 min, the display screen will automatically decrease brightness and any button can wake it up.



5. When the discharge reaches the termination condition you set, it will automatically stop and emit a buzzing sound, and the test result page shown in the following figure will pop up. This page will display the Ah/Wh/Time/BMS End V / V A curve.



Do not immediately turn off the power after the discharge is completed, as the cooling fan will continue to operate for 2 minutes.

Matters need attention

- Data must not be generated until the native machine ends the operation automatically.
- Do not power off or switch over the working mode during the machine operation, otherwise the data will not be saved.
- The machine runs for 2 minutes before starting recording the data (while overwriting the previous data).
- Any operation on the running machine must first press the pause key.
- Do not test batteries that are not rechargeable or zero voltage or have damaged bulges.
- There is high temperature at the air outlet on the back of the machine, and no objects are allowed within 1 meter.
- Do not test batteries over 120V, otherwise no warranty.
- Discharge off voltage / current must be set correctly and reasonably according to the battery specifications.
- Testing must be conducted in a supervised open environment, without high temperature flammable and explosive valuables around.
- The product shall not be leased / transferred / donated to a third party, otherwise the consequences shall be borne and the after-salesservice shall be terminated.
- Use a well-grounded socket (otherwise there may be leakage or minor induction).
- This product is only a tool, and is entirely used by you, and our company refuses to accept any responsibility.

The warranty policy

Warranty service period is 1 year.

The warranty service is limited to normal use: man-made damage, self-disassembly, modification and repair, use not in accordance with the instructions, and damage caused by external force majeure factors are not within the scope of free warranty.

Accessories such as test fixtures are consumables without warranty.

When you need warranty service, please contact your dealer for processing. If you cannot contact the dealer, you can contact our company by email or phone.

There are no after-sales service stations in other countries except China.

If you need warranty service, please send the product to us for free repair, but you need to pay the freight for the round trip.

Common troubleshooting methods:

1: Why does the voltage and current displayed on this device not match your multimeter? Reason 1: The machine is calibrated using a fixed latitude PCS-1000I six and a half position high-precision voltmeter and ammeter at the factory, and is regularly sampled and tested for accuracy by a national third-party authoritative organization every year. However, your multimeter may not be able to achieve this accuracy. Method: Measure and compare with instruments of the same level as our factory. Reason 2: Inconsistent voltage measurement points. Method: If measuring voltage with current, you must measure the voltage sampling point (thin line position) of the fixture, otherwise the voltage may be inconsistent due to voltage drop.
2: Why do fixtures or battery terminals burn out? Reason: The contact area between the fixture and the battery terminal ear is too small or severely poor. Method: Increase the contact area to ensure good contact.
3: Why is there no result data? Reason: Failure to complete testing or work for more than 2 minutes. Method: Wait for the test to be completed or fully charge the battery before conducting the test.
4: Why is the test result data highly biased? Reason 1: Decreased battery capacity. Method: It is recommended to eliminate or repair the battery. Reason 2: Incorrect discharge parameter settings. Method: Set the parameters correctly and reasonably according to the battery cell specification book. Reason 3: The local error exceeds the nominal value. Method: Return to the factory for calibration.
5: Why is the battery overheating severely during the testing process? Reason 1: The discharge current exceeds the battery's tolerance range. Method: Set the parameters correctly and reasonably according to the battery cell specification book. Reason 2: The internal resistance of the battery is too high or damaged. Method: It is recommended to eliminate or repair the battery.
6: Why is there a significant fluctuation in current during the testing process? Reason 1: The contact area between the fixture and the battery terminal ear is too small or loose due to poor contact. Method: Increase the contact area to ensure good contact. Reason 2: Poor battery performance (increased internal resistance or unstable internal resistance fluctuations). Method: It is recommended to eliminate or repair the battery.
7: Why is the testing process automatically interrupted? Reason 1: The contact area between the fixture and the pole ear is too small, resulting

in excessive pressure drop or poor contact. This machine provides protection. Method: Increase the contact area between the fixture and the pole ear, and ensure good contact. Reason 2: The set discharge current exceeds the battery's tolerance range, resulting in local protection. Method: Reduce the discharge current and set it correctly and reasonably. Reason 3: Increased or unstable internal resistance of the battery leads to local protection. Method: It is recommended to eliminate or repair the battery. Reason 4: The fixture and battery terminal ear are not suitable. Method: Replace the appropriate fixture.
8: Why did you quickly discharge the battery? Reason 1: Excessive discharge current caused the machine to quickly stop working after reaching the set cut-off voltage. Method: Set parameters correctly and reasonably. Reason 2: The internal resistance of the battery has increased and is close to being scrapped. Method: It is recommended to eliminate or repair the battery. Reason 3: The contact area between the fixture and the battery cell ear is too small or the contact is poor. Method: Increase the contact area to ensure good contact.
9: Why does the voltage rise a few hours after the battery test is completed? Reason 1: Any battery is like this, the voltage will naturally rise after being discharged and left to stand for a period of time. Method: Physical properties cannot be changed.