

BATTERY TESTER

◆ Notice for Use

Before using the instrument, please be sure to carefully read and clearly understand the Specification!

1. The using place should be well ventilated and have good weather and environment conditions, and the test should be preferably carried out indoors under normal temperature.
2. Please do not use the instrument outdoors in such severe weather as rain or snow; please keep the instrument maximally away from open fire, water, inflammable and explosive during use.
3. Before using the instrument for detection, please correctly distinguish the positive electrode (+) and the negative electrode (-) of the accumulator; then, connect the instrument clamp with red casing pipe firmly to the positive electrode (+) of the accumulator and connect the clamp with black casing pipe firmly to the negative electrode (-) of the accumulator.
4. Please do not adopt the instrument for on-load test for a long time, or continuously for on-load test.
5. In case of test unavailability or within the short time after test, please do not touch the back cover shell of the instrument in order to avoid scald.
6. After test, please cool the instrument for certain time as much as possible and then store it.
7. If the instrument is not used, please properly store it in clean and safe indoor environment. If the instrument has appearance damage or LED has abnormal digital display, please do not continue using it.

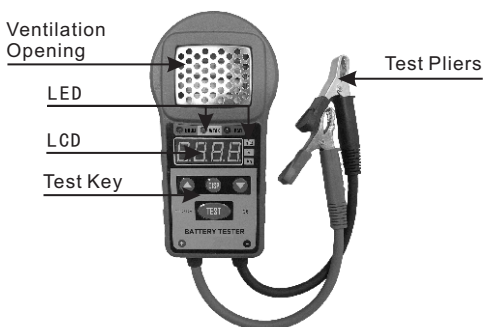
◆ Product Features

The instrument can quickly, simply, accurately and reliably judge the no-load energy, the on-load condition, the internal resistance of

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4. Maximum voltage: DC 19.99V.
5. Internal resistance range of battery: 1.00milliohm ~ 99.99 milliohm.
6. LED status indication:
Battery condition: "Green" (Sufficient Capacity), "Yellow" (Insufficient Capacity), "Red" (Replace Battery);
Charging system: "Green" (Normal Charging), "Yellow" (Abnormal Charging).
7. Accumulator capacity presetting: continuously adjustable in the range of 5-80Ah, with 5Ah increment.
8. Test time: less than 10s; test time interval: it is suggested as about 5min.
9. Poor contact prompt for test clamp; reverse clamp connection protection; input over voltage protection.
10. Using condition: -10℃~55℃, relative humidity: lower than 80%.
11. Product dimension: about 9.5*5.0*19cm; dead weight: about 860g.

◆ Indication Diagram for Instrument Panel



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the battery and the charging system conditions of 6V and 12V lead-acid accumulator. The instrument, provided with 32-bit high-end micro control unit for computation operation, can automatically judge the batteries with different voltages (6V or 12V) at the same time and the charging state thereof. Moreover, the instrument is internally provided with reverse polarity protection, over voltage input protection, poor contact prompt and over-temperature prompt. Therefore, the test can be smoothly, simply and conveniently carried out.

The on-load test method recommended by the international battery association is adopted for the instrument. Specifically, the corresponding mode is selected and set in advance according to the rated capacity of the accumulator tested thereby, and the short-time heavy load discharge of the battery is controlled to detect the discharge conditions of the batteries at the same time, and three LED indicator lights are adopted to simply and conveniently display the test result. The test process of the instrument and the data result judgment are processed by the internal arithmetic unit. Additionally, the test result can be reviewed.

The instrument shell is made of solid ABS engineering materials, and the load heating simulation part is up and down installed with stainless steel porous plate, and the fan is configured to strengthen heat dissipation in order to make the test process more stable and more reliable. The test line part is composed of thick pure copper test wire, and is also configured with four-wire Kelvin test clamp for connection. The test sampling data are directly sampled from the outgoing terminal of the battery in order to really recover the battery working condition in the battery working process and make the test result more accurate.

Excellent materials, reliable process and design, advanced circuit control, good workmanship and quality control system can ensure the high quality, accuracy and reliability of the instrument.

◆ Specification and Parameters

1. The instrument is applicable to common 6V and 12V lead-acid accumulators.
2. Load test current: about 20A.
3. Accumulator capacity detection range: 5Ah ~ 80Ah.

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◆ Instrument Starting Process and Operation

► Test preparation

1. Turn off automobile engine and electrical circuit, and pay attention to the nominal capacity value of the battery.
2. Connect the test lines of the instrument respectively to the positive and negative terminals of the battery.
3. The instrument enters the power-on self-test status to present digital display and turn on all LED indicator lights as well as make the buzzer ring for a long time.
4. After self-inspection, the instrument internally judges whether the connected system is 6V battery system or 12V battery system (the default system is 12V battery system); if the instrument detects that the external voltage is less than 8V (including 8V), the instrument will ask whether to connect to 6V battery system, as shown below (Bt6?):

Bt6?

5. If the actual access is 6V battery system (6V accumulator or 6V accumulator charging system), please press <Test> key to enter 6V battery test system; if it is not 6V battery system, please press any key to enter 12V battery system test.

6. After entering 6V battery system or 12V battery system, if the instrument detects that the external voltage is more than 13.30V (12V battery system) or more than 6.65V (6V battery system), the instrument will further ask whether to access the charging system, as shown below ("CHG?"):

CHG?

7. If the actual access is the charging system, please press <Test> Key to enter the charging system test; if it is not the charging system, please press any key to enter common battery condition test.

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► Common battery condition test (the same operation for 6V and 12V batteries)

In the battery condition test after test preparation process, specific process and operation of the instrument are as follows:

1. After entering common battery condition test, the instrument will display the battery ampacity set in previous test for 2s; if the battery ampacity in previous test is 80Ah, then the instrument will display 80 and highlight Ah.

2. After the instrument enters the test status subsequently, the no-load voltage of the present battery (battery capacity detection) will be displayed in the screen. Please pay attention to the following table and compare it with the battery capacity detected by the instrument.

In order to better understand battery capacity, the instrument can be adopted to measure the no-load voltage value of the battery for relevant judgment (there is no need to press the load switch at the moment). Please refer to the following table for judgment conditions.

★ (12V battery)

Displayed Voltage Value	<12.00V	<12.20V	<12.40V	≧12.60V
Battery Remaining Capacity%	<25%	<50%	<75%	100%

★ (6V battery)

Displayed Voltage Value	<6.00V	<6.10V	<6.20V	≧6.30V
Battery Remaining Capacity%	<25%	<50%	<75%	100%

3. After reading the no-load voltage of the battery, the user can press <Test> key to simulate the on-load battery for the internal resistance test of the battery. After the <Test> key is pressed, the instrument will enter the battery condition test process and display a waiting animation in this process; after the test, the instrument will display the on-load discharge voltage of the battery measured in the on-load process and will also prompt the direct measurement result of the battery: "Good" (green light), "Weak" (yellow light) or "Bad" (red light); the corresponding LED will go on, as shown in following figure:

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4. After the on-load discharge test of the battery, the user can press <Display> key to view other parameters in the test: battery ampacity set in the test (unit: Ah), internal resistance of battery (unit: mΩ), real-time no-load voltage of battery (unit: V) and on-load discharge voltage of battery (unit: V). The real-time no-load voltage of battery and the on-load discharge voltage of battery are differently displayed as follows: when the real-time no-load voltage of battery is displayed, the LED ("Good" (green light), "Weak" (yellow light), or "Bad" (red light)) for displaying the test result at the top will not go on. This LED will go on only for displaying the on-load discharge voltage of battery.

Note: the environment temperature can significantly influence the battery condition. The standard test environment temperature should be 21℃. When the environment temperature is lower than the standard temperature, especially in low temperature environment, the battery capacity will be obviously reduced. In general condition, the battery capacity is reduced by about 10% for every 6℃ reduction below the standard temperature.

► Charging system detection: (the same operation for 6V and 12V charging systems)

When the instrument prompts "CHG?", please press <Test> key to enter the charging system detection:

CHG?

After <Test> key is pressed, the instrument will enter the charging system test status and automatically analyze the charging system according to the operation result of the test preparation. The output voltage of the present charging system is displayed in the main screen; if the charging system has good output, the LED green light at the top of the display will go on ("Normal Charging"); if the charging system has dissatisfactory output voltage (too large or too small), the LED yellow light at the top of the display will go on ("Abnormal Charging").

Note: in the charging system detection process, all input operations are inapplicable to the keys of the instrument.

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In the display, the on-load voltage of the battery is 12.05V, thus indicating that the battery is in good condition.

▼ Test Result Analysis Table:

Test Result Display	Battery Condition
"Good"(LED green light goes on)	The battery is in good condition and has sufficient capacity.
"Weak"(LED yellow light goes on)	If the light has stable luminance, then the battery is in good condition but has insufficient capacity.
"Bad"(LED red light goes on)	At this moment, an alarm will be sent out to indicate battery problem. In such case, it is necessary to loosen the load switch and observe the no-load voltage value of LED digital display instrument. If the displayed value is quickly recovered above 1J12V, then the battery problem is indeed indicated; if the displayed voltage value is slowly increased, then it is indicated that the battery may not be damaged but further detection should be implemented.

Note: In the test, if the no-load voltage of the battery is less than 12.00V (12V battery system) or less than 6.00V (6V battery system), the instrument will prompt low voltage after the <Test> key is pressed. In such case, it is necessary to firstly charge the battery before simulating the on-load test for the battery. The low voltage indication of the instrument is as shown in the following figure:

Low

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Battery ampacity setting:

The fixed load discharging mode is adopted for the instrument, so different discharging judgment voltages are adopted for the batteries with different ampacities. Before common battery condition test, it is necessary to input the corresponding judgment voltage into the instrument according to the actual ampacity of the measured battery in order to more accurately judge the result.

1. Under common battery condition test mode, it is necessary to press the direction keys (<▲><▼>) to adjust the ampacity value for test judgment according to the actual ampacity of the battery, wherein the adjusting range is 5-80Ah, with the increment of 5Ah.
2. The adjustment of ampacity value should not influence the ampacity value used for the previous test or the measurement result of the previous test. The new adjustment value is valid only for the new test.

◆ Supplementary Instruction

The manufacturer provides a quality warranty period of one year for the product. But for any fault caused by the user's violation against the Specification, relevant common senses and relevant laws & regulations, the manufacturer should not bear relevant responsibility incurred thereby.

The manufacturer reserves the right for product modification. Please forgive us for any partial product change incurred thereby or any difference with the Specification, without prior notice.

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