

# **EBC-X Battery Tester (User Manual V1.6.5)**

Thank you for selecting the EBC-X Battery Tester. The battery testers of this series are designed for battery testing and cell grading and can be adopted to a wide range of batteries like Lead-Acid, Li-Fe and Li-Ion.

All devices are shipped fully tested and calibrated and, with proper use, will provide years of reliable service. Please read this user's manual for proper use of the testing system. For any update please visit [www.zktech.com](http://www.zktech.com) to learn more information.

## Contents

1. Features .....	3
2. Specifications .....	4
3. Test connection.....	5
4. Software installation .....	5
5. Software operation .....	6
6. Other functions.....	13
7. Precautions .....	15



## 1. Features

### 1.1 Range of application

The EBC-X battery testers can be used for testing and grading a wide range of batteries like LiFe, LiPo, Pb and etc. We provide testers of three categories: high power testers, which cover a range of 5V20A-200A and allow you to test batteries with high capacities, power batteries and super capacitors; standard testers with a range of 5V5A-10A, and low power testers of 5V1mA-1000mA including button cells and other batteries with low capacities. We also provide customaries testers to meet your special needs.

### 1.2 Hardware characteristics

The testing system consists of upper computer (PC) and lower computer (control circuit unit) and ensure reliable tests.

Each channel works independently and parameters can be set individually in charging and discharging.

The system adopts modularized hardwires which are easy to extend and maintain.

The EBC-X testers connect with independent clamps which can be replaced in testing different batteries.

Power and channel indicators on testers allow you to read working state easily.

### 1.3 Software characteristics

In the software you can read working state, voltage, current, capacity, energy, cycle number and etc. It allows you to set parameters up to 10 steps and for 1000 cycles. Each channel separates from the others and you can select single channel or multi channels. Charging and discharging current, voltage and capacity display in curves which supports for later analization. The software supports automatic data recording and parameter calibration.

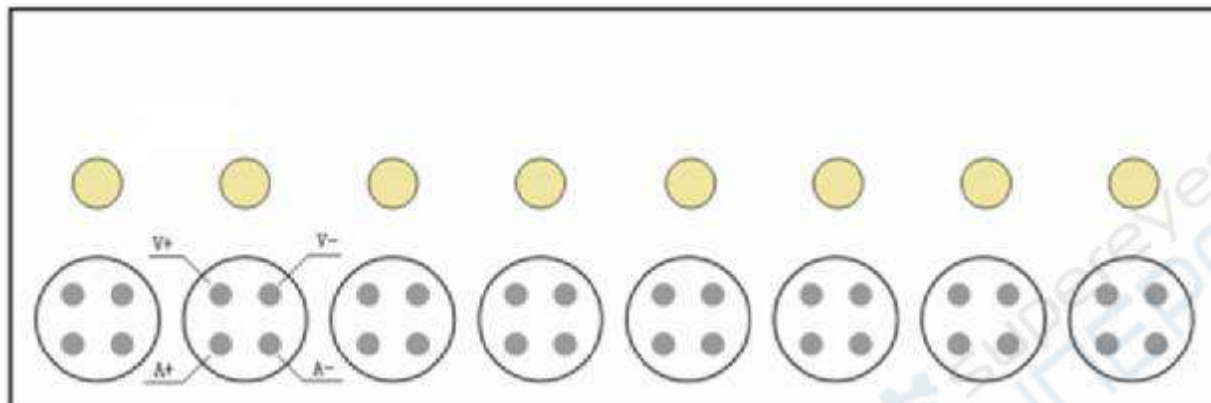
## 2. Specifications

Model	X0501		X0510
Voltage Range	0-4.500V		
Voltage Accuracy	0.1%±0.003V		
Current Range	0.001-1.000A		0.1-10.00A
Current Accuracy	0.2%±0.0005A		0.2%±0.005A
Charge Current	0.001-1.000A		0.1-5.000A
Charge Mode	CC-CV		
Charge Termination	Time/Cut-off Current/Manual		
Discharge Current	0.001-1.000A		0.1-10.00A
Discharge Mode	CC		
Discharge Termination	Time/Cut-off Voltage/Manual		
Testing Channel	8 separate channels		
Heat Dissipation	Fan		
Power Supply	200-240V AC		
Packed Size	300*260*110		350*260*110
Packed Weight	3Kg		5.5Kg



### 3. Test connection

#### 1) Front panel



Each channel has a yellow LED indicator and a 4-core aviation plug socket. The LED indicator lights up during charging or discharging and goes off under other conditions. V+ and V- (as showed in the diagram above) allow you to test voltage while A+ and A- for current testing

#### 2) Back panel

On the back panel you will find power switch (3-core AC) on the right and USB port (4-core aviation plug socket) on the left.

### 4. Software installation

#### 1) System requirements

- 2 Processor main frequency > 1G Hertz
- 2 RAM > 1G, more RAM is suggested.
- 2 Free disc space > 1G
- 2 Either Windows XP/Win7/Win8/Win10
- 2 Computer monitor: 1024×768 or higher

#### 2) Software installation

First install the tester software. Please double click this icon to start installation.



ebx\_setup\_v1.6.exe

Next install the USB port driver. Please double click this icon to start installation.

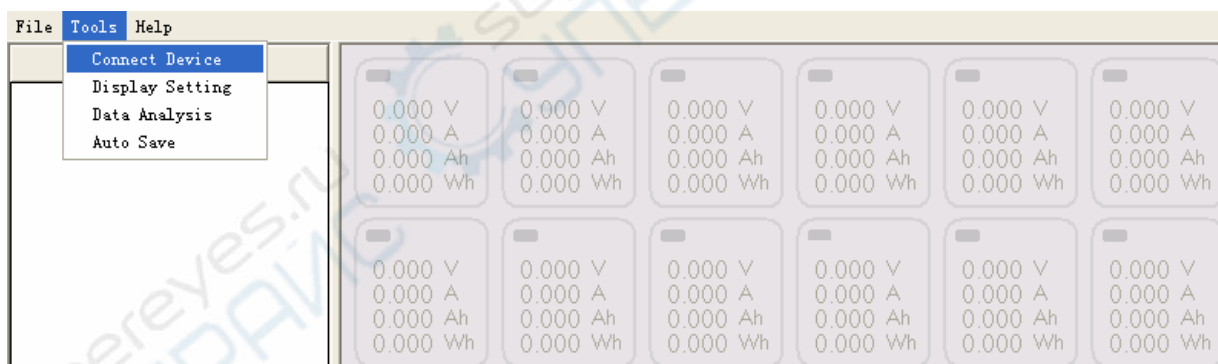


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After installation completes, plug in the USB cable and you will find corresponding port number in Device Manager in your computer (EB software can't identify any port number larger than COM 10, please change the port number to smaller than 10 if it's larger than 10).

## 5. Software operation

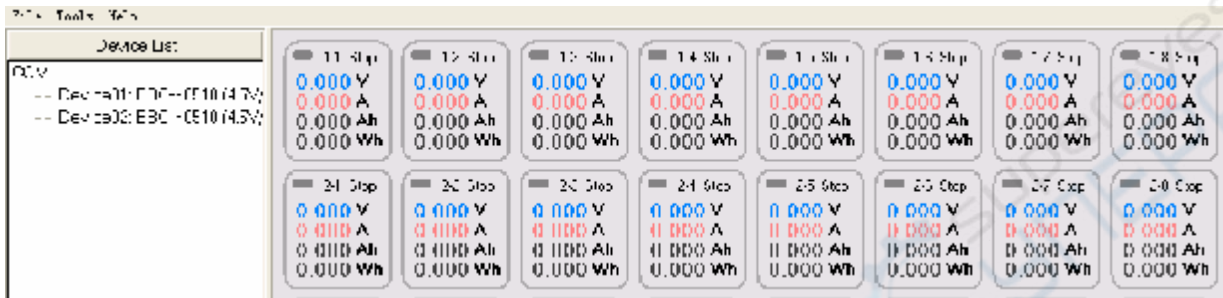
- 1) Switch on the tester.
- 2) Plug in the USB cable.
- 3) Connect the tester with a computer: run EBX software and click on Connect Device in the drop-down list of Tools.



- 4) In the interface of "Connect to Devices", select the right port (same COM number as that in the computer Device Management) and click on Connect to build connection between the tester and the computer. It allows you to select device numbers in "Address" to include up to six eight-channel testers working through this single COM at the same time.



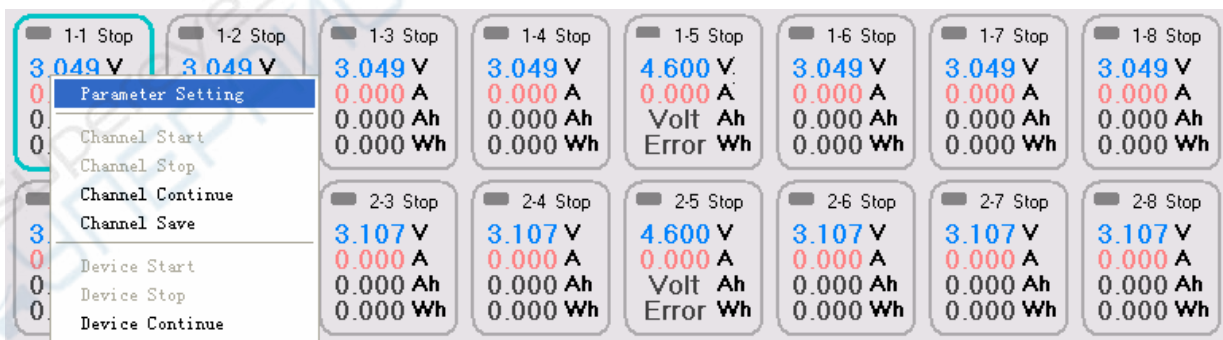
5) As soon as connection builds, you will see the main interface. In the upper left of the interface you will find a Device List with information of every tester in use.



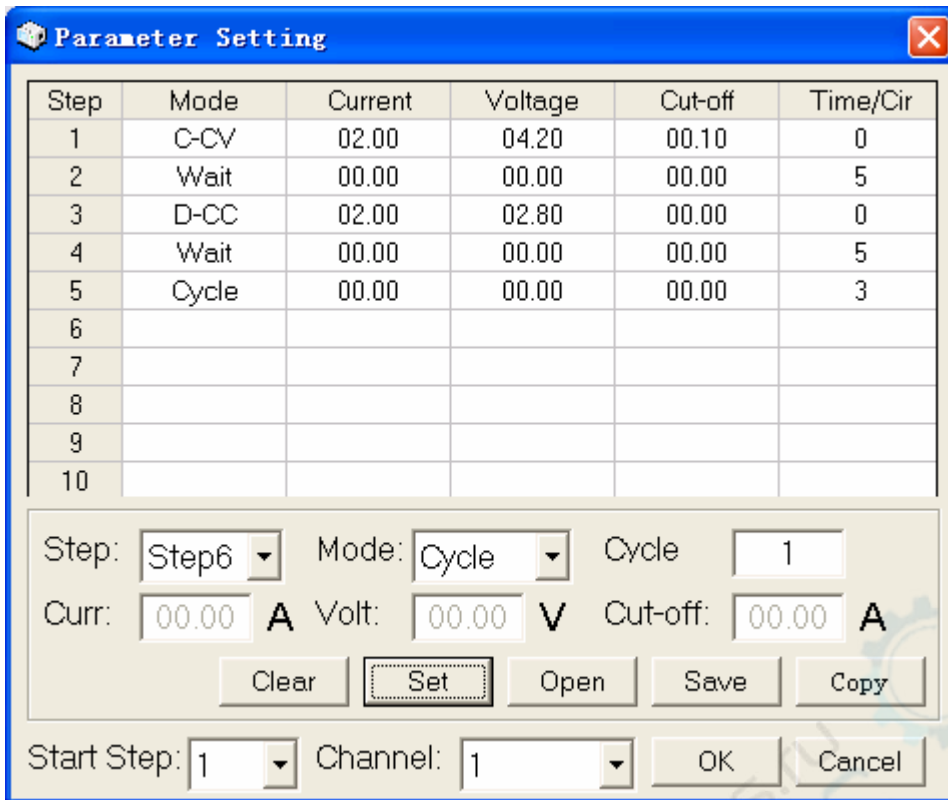
6) Fix batteries on the testing clamps, and voltage of each channel will display in the right part of the interface.



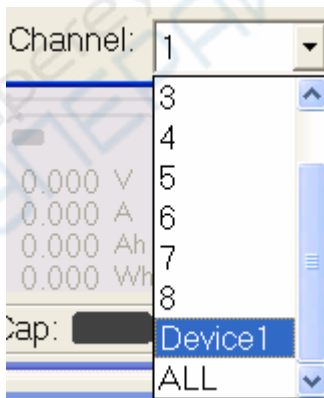
7) Right click on any channel to set parameters in Parameter Setting.



8) Set parameters in the Parameter Setting interface. It allows you to set Step-Mode-Current-Voltage and etc.



- 2 Clear: Remove all parameters you've set.
- 2 Set: Set test parameters for the current step.
- 2 Open: Open saved files of parameters.
- 2 Save: Save current parameter files to local disks.
- 2 Copy: Copy parameters of other steps to current step.
- 2 Start Step: Select the starting step.
- 2 Channel: Select the channel(s) to use the current parameters.

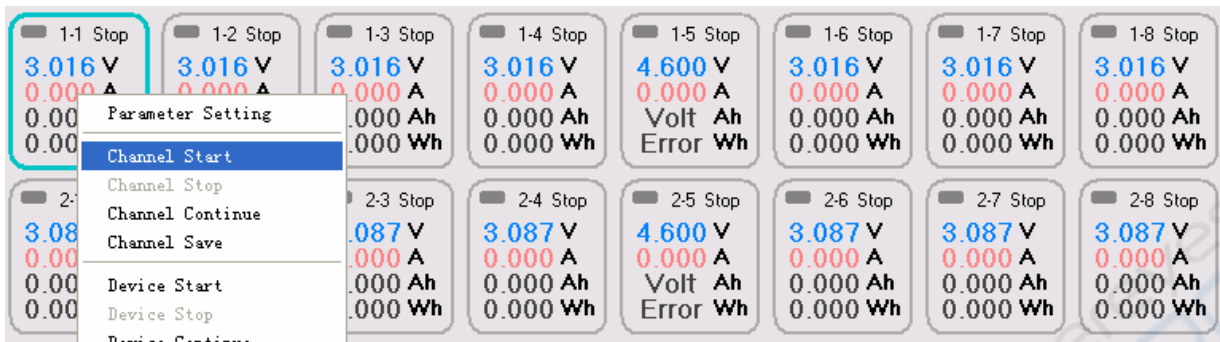


- 2 OK: Use parameters to selected channel.

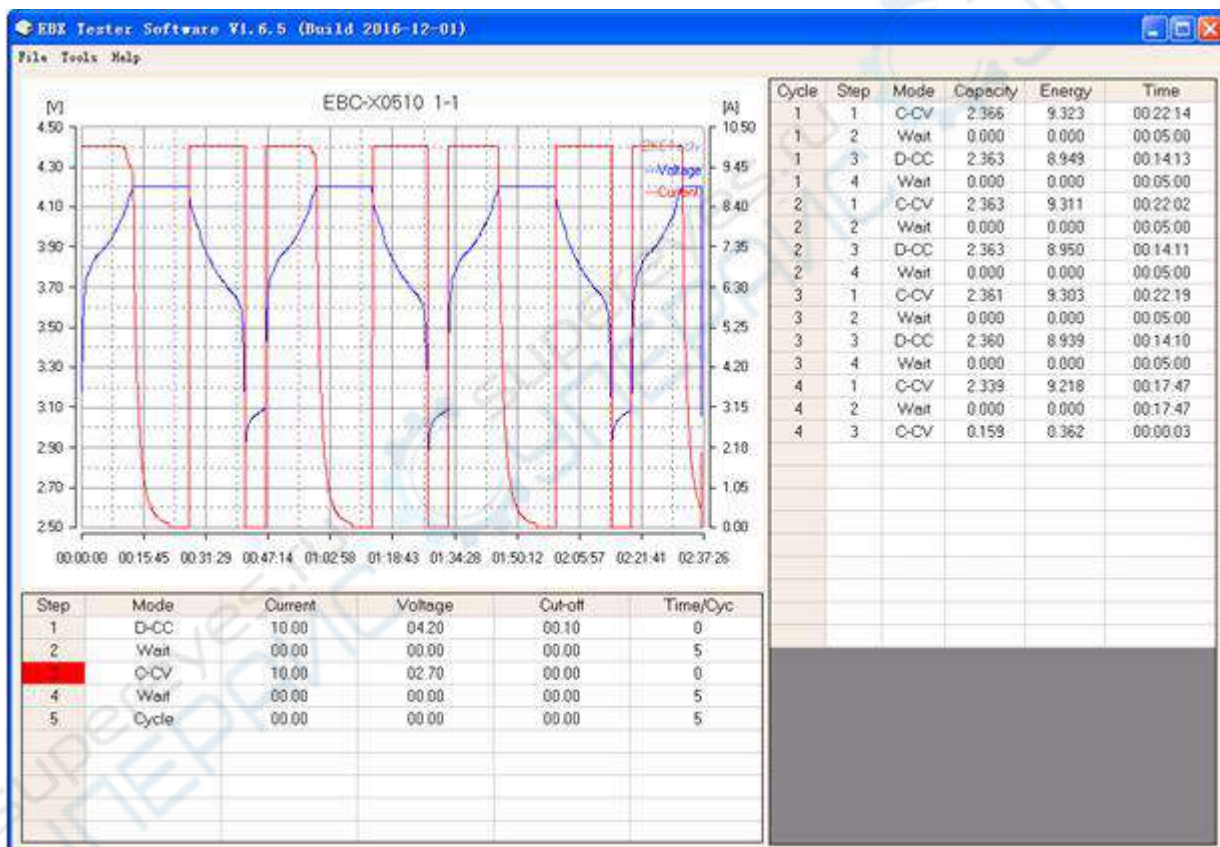


2 Cancel: Cancel parameter setting.

9) Right click on a channel and select “Channel Start” on the pop-up menu to test that channel, or select “Device Start” to test all the eight channels in a tester.



10) Double click on a channel to open the interface with detailed data of that channel.

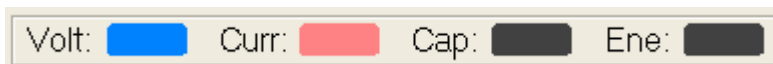


Double click on the curve display area to go back to the main interface to have an overall view of parameters in every channel. The colorful box on the top of each channel means as follows:



- 2 Green : Discharging
- 2 Red : Charging
- 2 Yellow : Waiting
- 2 Gray : Stop

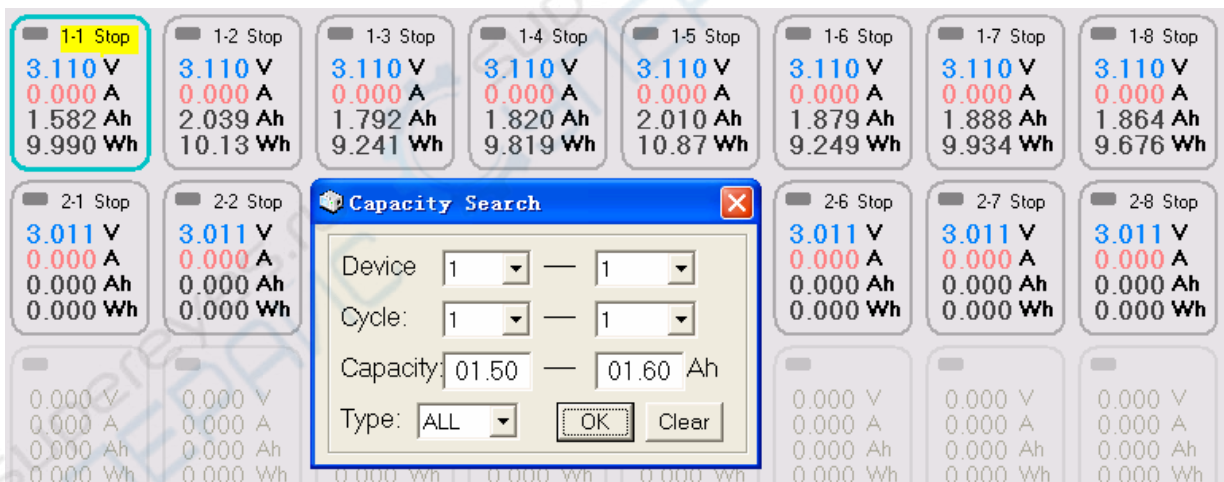
The system allows you to change fonts and colors of parameters displayed on the right of the main interface. It takes a single click on characters at the bottom.



11) You can switch between “Graph View” and “List View” by clicking on the icons.



12) After testing completes, you can identify channels with required capacities by clicking on “Cap Filter” to open the menu of “Capacity Search”.



Set capacity ranges and click on “OK” to display certain channels and click on “Clear” to return to original displays.

13) Click on “Data Report” at the bottom of the main interface and you will see all test results.

Channel	Step	Capacity	Step	Capacity	Step	Capacity	Step	Capacity	Step	Capacity
1-1	1-1 C-CV	1.582								
1-2	1-1 C-CV	2.039								
1-3	1-1 C-CV	1.792								
1-4	1-1 C-CV	1.82								
1-5	1-1 C-CV	2.01								
1-6	1-1 C-CV	1.879								
1-7	1-1 C-CV	1.888								
1-8	1-1 C-CV	1.864								

Device: 1 — 1 Cycle: 1 — 1 Type: ALL [OK] [Save] [Clear]

14) In the display of “Graph View”, you can right click on a certain channel to open the drop-down menu. On the menu, select “Channel Save” or “Device Save” to save data to hard disks.

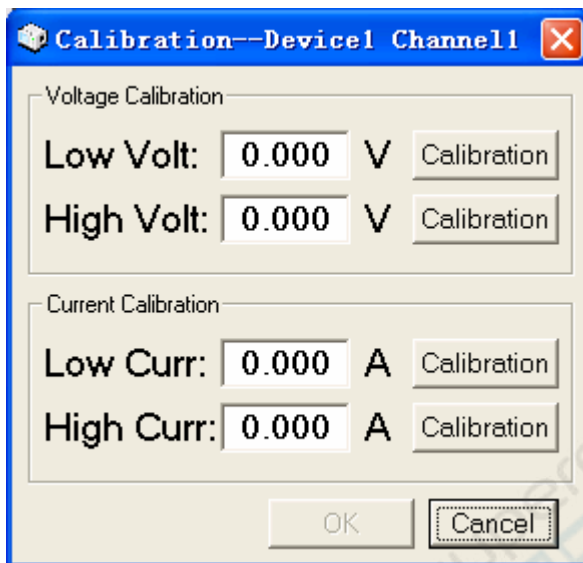


15) Options on the drop-down menu

- 2 Channel Start: start testing the present channel
- 2 Channel Stop: stop testing the present channel
- 2 Channel Continue: continue last test in the present channel
- 2 Channel Save: save testing results of the present channel
- 2 Device Start: start testing all channels
- 2 Device Stop: stop testing all channels

- 2 Device Continue: continue testing in all channels of the device
- 2 Device Save: save testing results of every channel in the device
- 2 Multiple Start: start testing selected channels
- 2 Multiple Stop: stop testing selected channels
- 2 Multiple Continue: continue last testing in selected channels
- 2 Parameter Calibration: calibrate voltage and current of the present channel

#### 16) Parameter Calibration



To calibrate the voltage, you need a high precision multimeter and an adjustable voltage source (can be replaced by two batteries of different voltage).

Connect the channel to a low voltage. Measure the actual value with the multimeter (for example 1V) and fill it in "Low Volt". Click "Calibration".

Then connect the channel to a high voltage. Measure the actual value with the multimeter (for example 4V) and fill it in "High Volt". Click "Calibration".

Click "OK" to save the voltage calibration parameters. A small difference between the high and the low voltage is enough.

To calibrate the current, you need a high precision multimeter and a battery.

Connect the battery to the channel, set a low current and start discharging it. Measure the actual value with the multimeter (for example 0.5A) and fill it in "Low Curr". Click "Calibration".

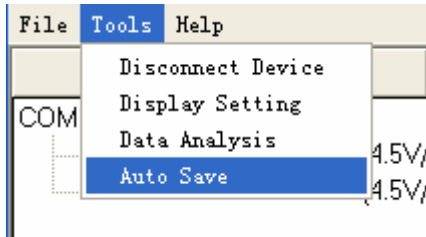
Set a high current and start discharging. Measure the actual value (for example 2.5A) and fill it in "High Curr". Click "Calibration".

Click "OK" button to save discharging currents. A small current difference is enough.

Follow the same steps and complete calibrating charging current. Click “Cancel” button to go back to the main interface.

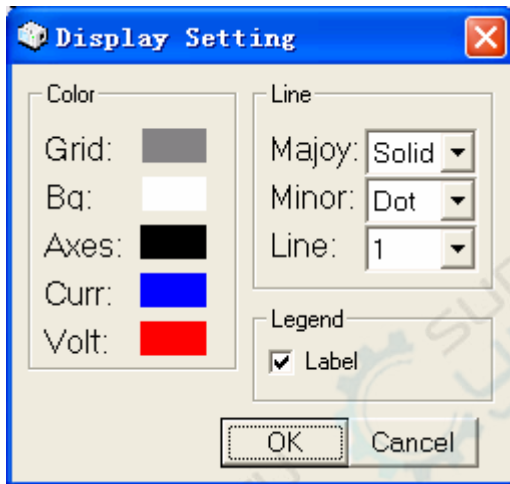
## 6. Other functions

### 1) Auto Save



Click on Tools to open the drop-down menu and you can select Auto Save to save testing results automatically in the Data file in the installation directory.

### 2) Display Setting

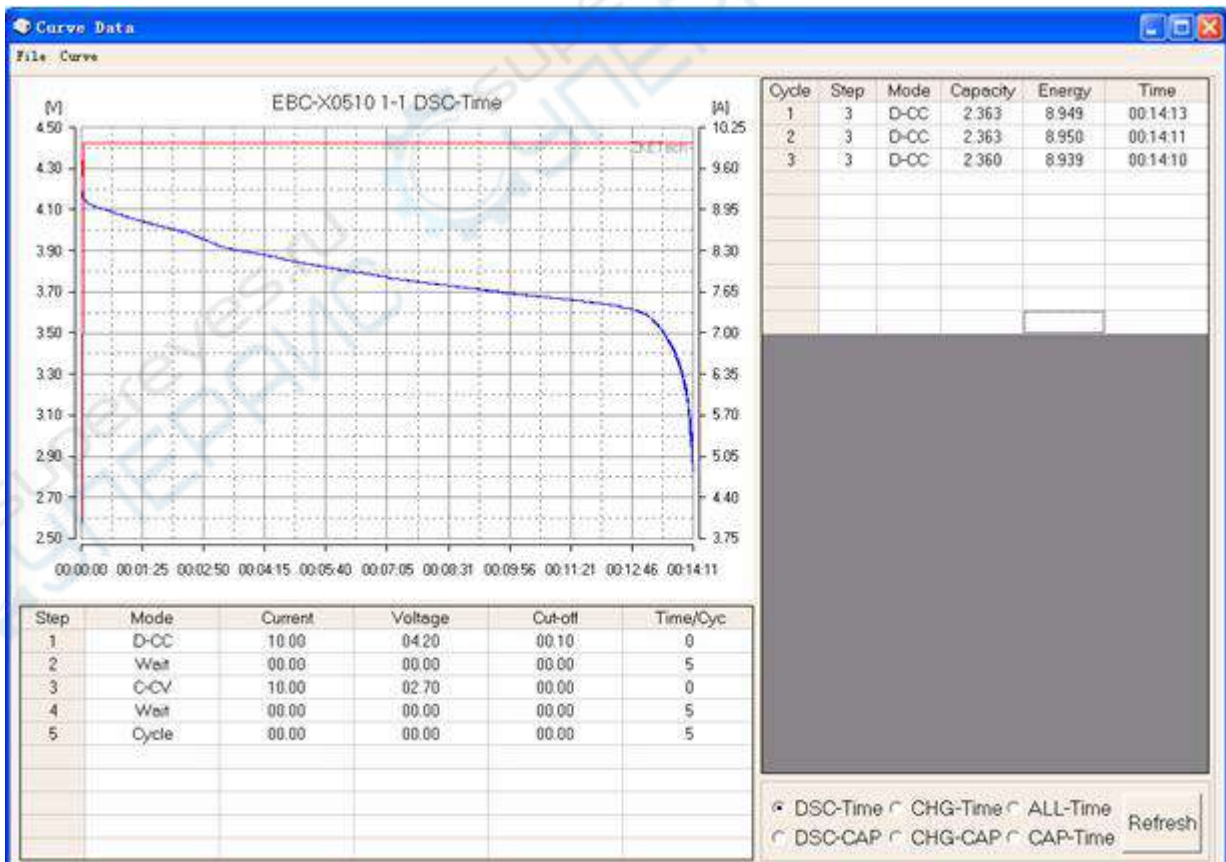
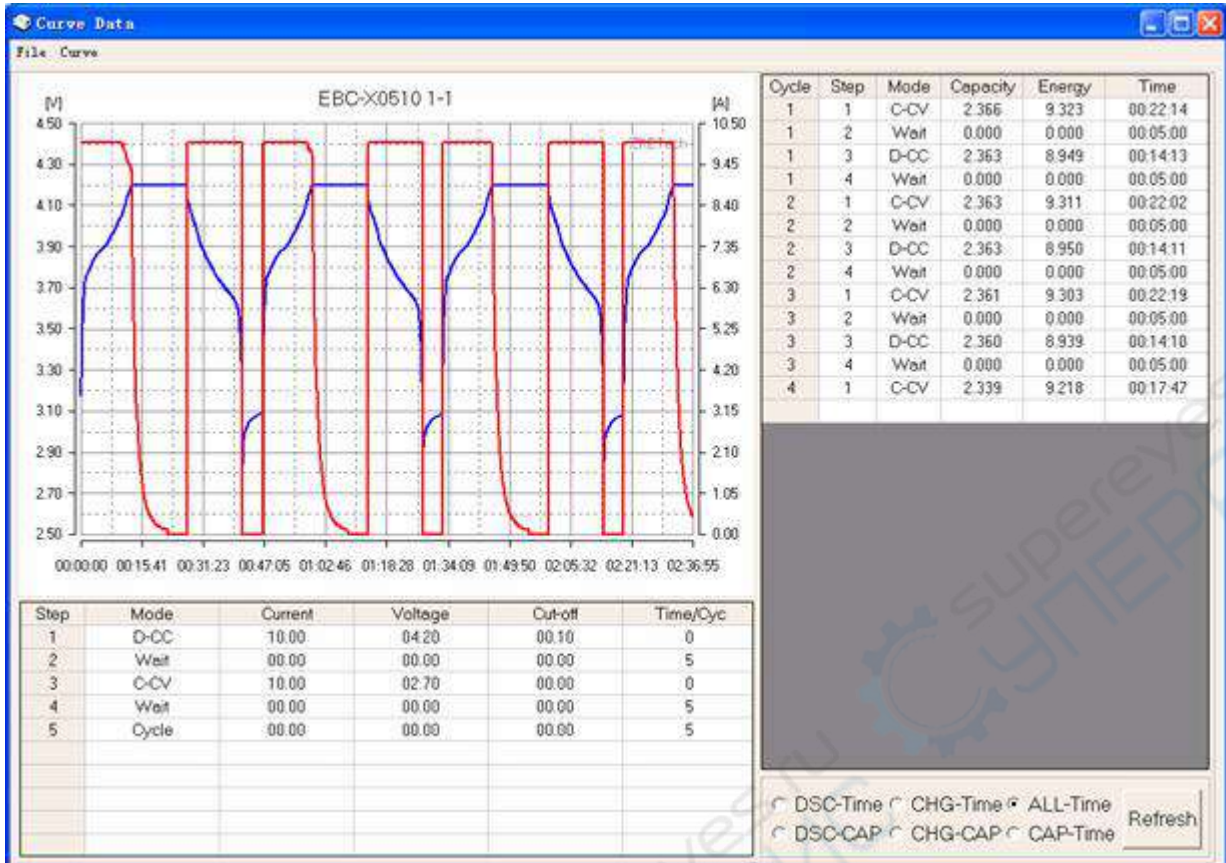


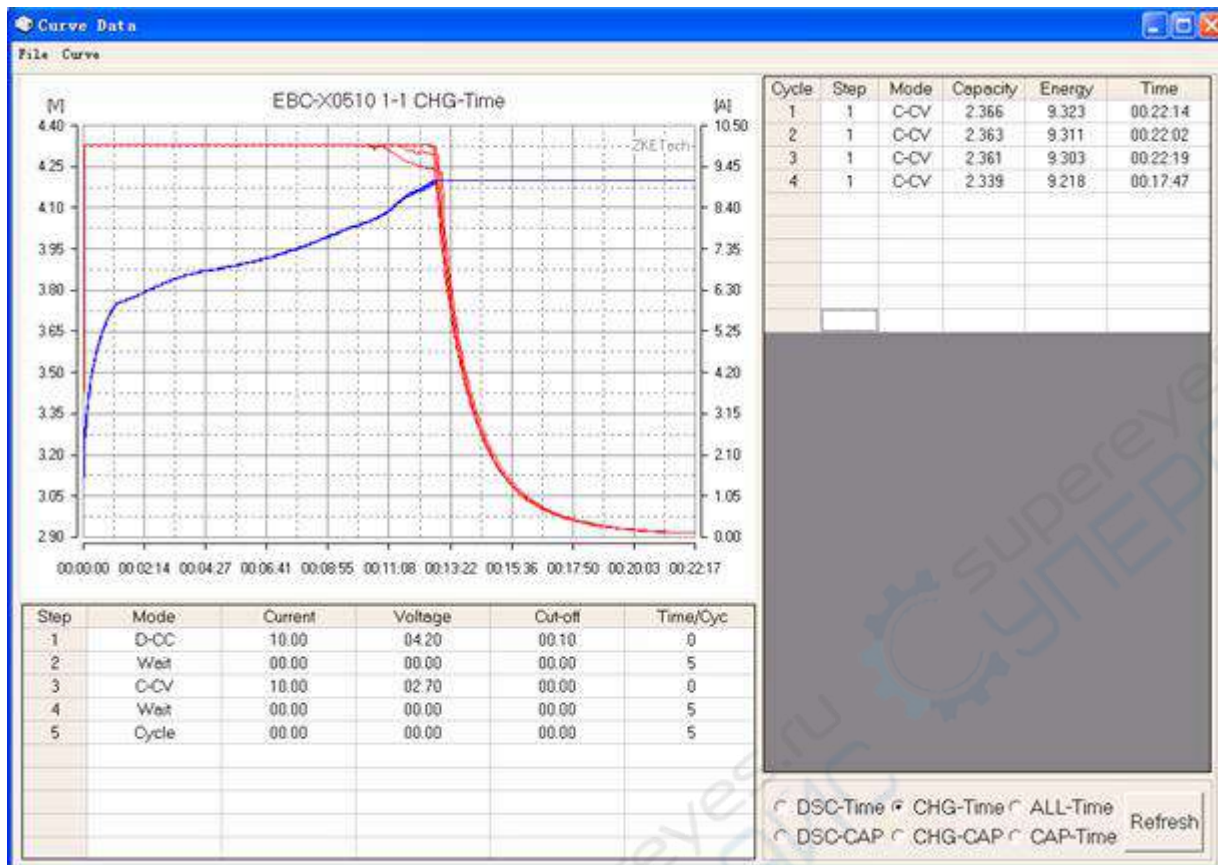
Click on Tools to open the drop-down menu and you can select Display Setting to set Curves and Lines in curve display area.

### 3) Data Analysis

Click on Tools to open the drop-down menu and you can select Data Analysis to open the menu of Curve Data. On the menu you can select data files by clicking on File. The default display of files contains testing data and curves of each testing step. You can select curve types at the right bottom and click on Refresh to get curves you want.







## 7. Precautions

- 1) Please switch on the tester before you connect it to your computer.
- 2) Please remove all batteries from your tester before you switch it off.
- 3) Not support testing batteries in series.
- 4) Always use the tester within the allowed range.
- 5) Follow calibration instructions in case unproper operation reduce precision.

We always focus on innovation and improvement and will keep upgrading the software. Please frequently visit our official website: [www.zketech.com](http://www.zketech.com) to download the latest manuals.