

Multifunction Electronic Load (EBC-A05)



User Manual

1. Features

1.1 Battery Capacity Test

This tester is designed for charging and discharging of a wide range of batteries, including NiMH, NiCd, LiPo, LiFe and Pb, as well as the capacity test.

1.2 Portable Power Bank Test

This tester supports charging and discharging of portable power banks, as well as capacity test.

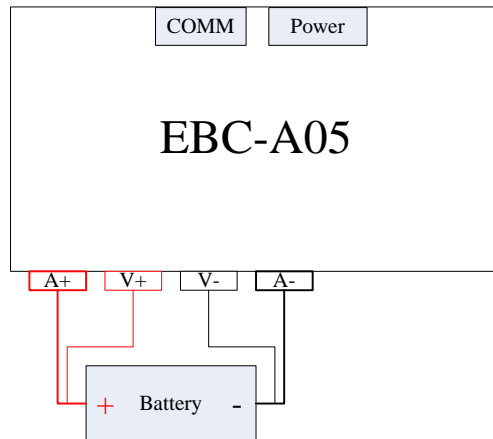
1.3 Power Performance Test

This tester supports performance and aging tests of various kinds of DC power supplies.

2. Specifications

- 1) Power Supply: DC 12V/3.5A or above
- 2) Voltage Range: 0-4.500V/4.50V-30.00V
- 3) Current Range: 0.1-5.000A
- 4) Charging Function: (This tester can charge single battery or battery packs up to 10V at 0.1-3.00A. Max charging current = Power current – 0.5A)
 - 2 Standard Charging: Support NiMH, NiCd, LiPo, LiFe and Pb batteries
 - 2 CV Charging: Support custom CC-CV charging
 - 2 Fixed Output: 5V/2A output, support charging portable power banks and cell phones
- 5) Discharging: (0-30.00V, 0.1-5.00A, max power 60W and automatic current limiting above)
 - 2 CC Discharging: Discharging a relatively uniform current, support testing battery capacity or current of power supplies
 - 2 CP Discharging: Discharging a relatively uniform power, for constant power equipment-like use or testing power
- 6) Automatic Charging/Discharging: The tester support “charging-discharging-charging” mode in capacity tests.
- 7) LCD Display: voltage, current, time, capacity, power, energy, and etc
- 8) PC Connection: The tester can be connected to a computer through a designated USB-TTL cable to have more functions.

3. Connecting pattern



3.1 Testing Ports

The tester has four banana jacks which connect with A+/V+/V-/A-. A+ and A- ports are connected with the positive and negative poles of the test objects, working as the current channel in charging and discharging. V+ and V- ports are connected with the positive and negative poles of the test objects, working as the voltage channel in voltage tests. This way of using four individual cables will help eliminate the effect of wires on the test result and improve the test precision.

3.2 PC Connection

The tester can be connected with a computer through a designated USB-TTL cable.

3.3 Input Power:

The tester works on a power supply of above DC 12V/3.5A and interface specification of 5.5/2.1 (inside positive and outside negative).

4. Display and setting

4.1 Buttons

- ON — start and stop
- SET — set up and switch
- INC — page up and increase
- DEC — page down and decrease

4.2 Testing Interface

```
CC 00.00V 0.000A
OFF 0000 0000mAh
```

The first line shows testing mode, voltage and current. Testing modes include:

- 2 CC – constant current discharging
- 2 CP – constant power discharging
- 2 Ni – NiMH/NiCd charging
- 2 Li – LiPo/LiFe charging
- 2 Pb – plumbic acid battery charging
- 2 CV – custom constant voltage charging
- 2 PW – fixed voltage output (5V/2A)

The second line shows working process, working time (in minute) and capacity (automatic switch between 0000mAh and 00.00Ah).

Working process reads OFF when the test stops and DSC or CHG in testing. It shows AT1 if you choose automatic charging/discharging and 1 means the step 1 of current testing.

A short press on the “SET” button and the display changes to power and energy.

```
CC 00.00V 0.000A
OFF 00.0 0000mWh
```

In automatic “charging-discharging-charging” test, you can check test results of each step by a short press on “INC” or “DEC” buttons.

```
Auto Test:
AT2: CC 2600mAh
```

Press the “ON” button to start testing and one more press to stop.

You can open setting interface by press on the “SET” button for 2 seconds in the stop state (This function is invalid when the tester being connected with the PC software).

4.3 Setting Interface

The cursor default is on mode setting. Press the “SET” button to move it to the value you want to set up. One press on “SET” and the cursor moves one digital toward right. Press the “INC” and “DEC” buttons to modify the value. Press the “ON” button the move to the next item. It will go back to the limit value if your setting exceeds the allowed range.

1) CC discharging

```
DSC-CC 0.00A
00.00V 000Min
```

First line: mode and discharging current setting.

Second line: cut-off voltage (testing automatically stops when voltage reaches below this value) and the maximum testing time setting (no time limit if being set 0).

2) CP discharging

```
DSC-CP 00.0W
00.00V 000Min
```

First line: mode and discharging power setting

Second line: cut-off voltage (testing automatically stops when voltage reaches below this value) the maximum testing time setting (no time limit if being set 0).

3) Standard charging

```
CHG-NiMH 0.00A  
01 000Min NOR
```

First line: mode and charging current setting. Modes include: NiMH, NiCd, LiPo, LiFe, Pb

Second line: batteries numbers (plumbic acid: 2V for each battery), charging time (no time limit if being set 0) and auto mode setting:

- 2 NOR – normal mode, charging will finish soon.
- 2 AUTO – automatically finish the “charging-discharging-charging” process.

When cursor is on AUTO, a long press on “ON” and you will move to the second step of auto discharging setting.

```
AUTO Discharge  
0.00A 00.00V 00
```

The first parameter: discharging current; the second parameter: cut-off voltage; the third parameter: interval between step switches (a 5-10 minute waiting time is suggested in a switch between charging and discharging to cool the battery).

4) Custom charging

```
CHG-CV 0.00A  
00.00V 0.00 NOR
```

First line: mode and charging current setting

Second line: CV voltage, cut-off current (testing stops when the voltage reaches below this value, can be set above 0.06A) and automatic mode setting (same setting as standard charging).

5) Fixed voltage output

```
CHG-PWR  
DC5V Output Mode
```

Select “CHG-PWR” for fixed voltage output and don’t need to set any other parameter. The mode turns off if the current becomes 0 within 10 seconds of testing.

In setting mode, a long press on “SET” button to save data and return to testing interface.

When setting completes, press “ON” button on the testing interface and testing starts.

4.4 Setting examples

1) CC discharging settings (3.7V LiPo to 2.8V at 2A)

```
DSC-CC    2.00A
02.80V    000Min
```

2) CC discharging settings (12V power/60-minute discharging at 1.5A)

```
DSC-CC    1.50A
00.00V    060Min
```

3) Standard charging settings (3.7V LiPo, charging to 4.2V at 1A)

```
CHG-LiPo  1.00A
01 000Min NOR
```

4) Custom charging settings (3.7V LiPo, charging to 4.2V at 1A, cut-off current set at 0.08A)

```
CHG-CV    1.00A
04.20V 0.08 NOR
```

5) Auto test (3.7 LiPo, charging at 1A and discharging at 2A, set a 5-minute interval between charging and discharging)

```
CHG-LiPo  1.00A
01 000Min AUTO
AUTO Discharge
2.00A  02.80V 05
```

5. Precautions

- 1) Positive and negative connections should not be reversed.
- 2) Always use the tester within the allowed range.
- 3) The maximum charging current should be set below power current – 0.5A.
- 4) This manual is applicable to firmware 08-24. Please download the latest software for a upgrade if your version is released earlier than the date.
- 5) PC software: <http://zke2006.blog.163.com/blog/static/199527095201111284512232/>
- 6) Technical support:

QQ: 2353976901

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