Smart Battery Analyzer

USER MANUAL

Note: Due to continual product improvements, specification and instructions may change without noeice.

Content

SMART BATTERY ANALYZER
USER MANUAL

READ MANUAL CAREFULLY BEFORE OPERATION

Thank you for purchasing Smart Battery Analyzer! Thank you for giving us chance to serve you! Also congratulations! You are the owner of a Smart Battery Analyzer (SBA), the complete battery analyzer and charger and from now on, you will enjoy any convenience that SBA will bring to you. Please take a few minutes to thoroughly familiarize yourself with this step-by-step instruction manual to fully understand the features, operation and care of your Analyzer. By doing so, you will achieve the maximum potential of this device.

Your SBA offers 9 functions: testing Charging/Discharging function, Voltage, Capacity, Resistance, Short Circuit Protection, Overcharging/ Over discharging protection, Reactivating, Quick Charge, Quick Discharge.

Your SBA features:

1. The more accuracy measurement because 4-pole probes are applied;
2. Easy operation, it means your SBA can be operated by both your PC and the buttons;
3. Rapid analyzing;
4. A large easy to read liquid-crystal display (LCD) and a charging/discharging curve to display mode of operation and battery information;
5. An PC-interface to control and monitor your analyzer;
6. Saving and printing data by ANY printer.

Analyzer Allowable Cell Types:

- Ni-Cd and Nickel-metal Hydride: 2.4V to 7.2V
- Li-ion/Li-Polymer: 3.6V to 7.2V

SAVE THESE INSTRUCTIONS
IMPORTANT SAFETY INSTRUCTIONS

This manual contains important safety and operating instructions for Smart Battery Analyzer.
Before using your SBA, read all instructions and cautionary markings on the Analyzer.

CAUTION

To reduce risk of injury, charge only Ni-MH, Ni-CD, Li-ion and Li-Polymer rechargeable batteries.

Note: Other types of batteries may burst causing personal injury and damage.

- Never use with non-rechargeable electrochemical systems such as alkaline, mercury or carbonize.
- Do not expose analyzer to rain or snow.
- Use of an attachment not recommended or sold by SBA OEM may result in a risk of fire, electrical shock, or injury to persons.
- To reduce risk of damage to electrical plug and cord, pull on the plug rather than cord when disconnecting SBA from an electrical outlet.
- Route cord to avoid being stepped on, tripped over or otherwise subjected to damage and /or stress.
- Do not use an extension cord unless absolutely necessary. Use of improper extension cord could result in risk of fire and electrical shock. If extension cord must be used:
    a) Pins on plug of extension cord must be the same number, size and shape as those on the plug of the Analyzer.
    b) Extension cord must be properly wired and in good electrical condition.
- Do not operate unit with damaged cord or plug. Replace either immediately.
- Do not operate analyzer if it has received a sharp blow, been dropped, or otherwise damaged in any way; return unit to SBA manufacturing for repair.
- Do not disassemble your analyzer. Unauthorized disassembly may result in further damage and will void the warranty. Return unit to SBA Manufacturing when repair is required. HIGH VOLTAGE IS PRESENT INSIDE THE ENCLOSURE. Only properly trained technicians are authorized to repair or alter unit.
- To reduce risk of electrical shock, unplug analyzer from outlet before attempting any maintenance.
- Allow at least six (6) inches clearance at rear of unit for fan.
- Use only the proper power cord for the country in which the unit is intended.
- Ensure that if a replacement power cord is purchased from anywhere rather than SBA manufacturer, it conforms to the safety standards and power rating of the country for its intended use.

Structure Instruction

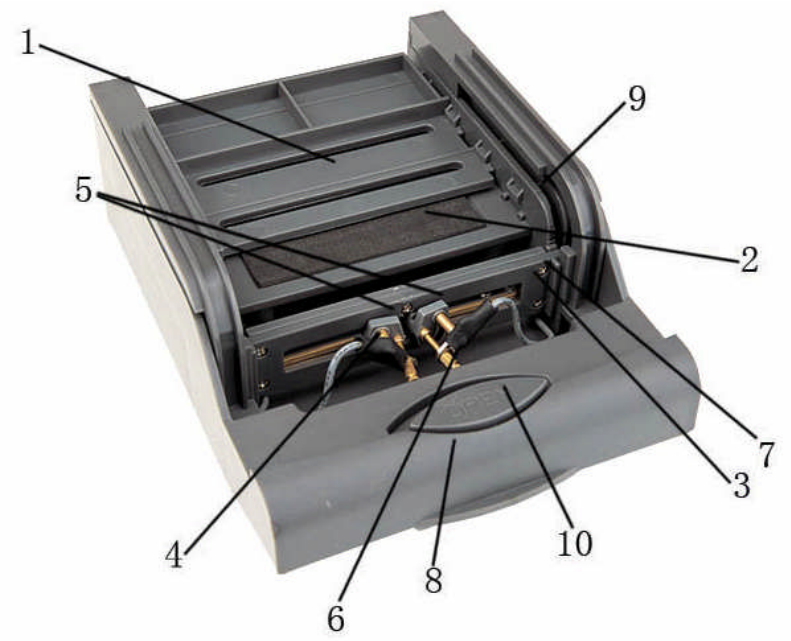
A. Front View

1. Enter
2. Select
3. Function
4. Print
5. Reset
6. Liquid Crystal Display (LCD)
7. Transparent Cover
8. Cover Lock

B. Rear View

1. Power Supply Jack
2. Jack Link to Printer/ Personal Computer
3. Switch
4. Bottom Housing
5. Top Housing

C. Adapter



1. Top board of battery holder
2. Base board of battery holder
3. Probe track board
4. Spring
5. Probe handles
6. Probes
7. Screw
8. Adaptor base board
9. Slide track
10. Cover button

Preparation

1. Make your analyzer ready

- Set the analyzer on a flat, steady surface allowing at least six (6) inches clearance at the rear of the unit.
- Check to make sure battery and analyzer contacts are clean. Dirty contacts can result in a battery analyzer malfunction.

2. Make your battery ready

- Push down the cover button to open the transparent cover, take out the adaptor.
- Lift up the probes and hold them in the standby position.
- Remove the top board of the battery holder, place the battery on the bottom board, and make sure that the metal faces upwards or out wards.
- Press down the battery so as to allow the top board to be fixed into the battery holder.
- Move the probe track board to make it parallel with the metals of the battery, adjust the probes to point directly to the metals, lower the probes to make them contact well with the metals of the battery.
- Put the adaptor back into the bay of the analyzer and close the transparent cover.

Computer Operation

1. Make your computer ready

- Connect your computer COM to “Serial” at the back of your analyzer with Serial core.
- Put your Compact Disc (CD) into your CD driver, open the CD, click “SETUP”, continue to do as the hint says, and Anderson’s software can be installed successfully.
- Open your controlling and monitoring interface.

  Click “Start” on the your computer find out “Speed” file from “Procedure”, click PRACI, then the controlling and monitoring board can be opened. You can also pull out PRAC1 out onto the table board; click it as the shortcut key to open the board. The controlling and monitoring interface contains 3 parts:

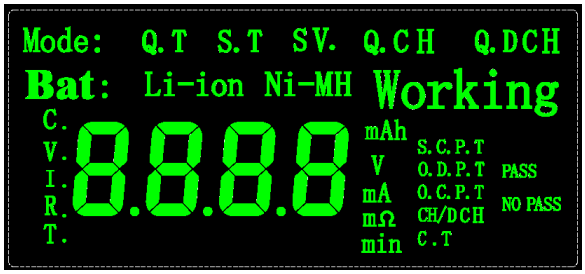
  a) Main Menu, including File, Setting Channel, Record and Help.

  b) Shortcut Keys, including Open Channel, Close Channel, Set Parameter, Browse Curve, Save Record, Browse Record, Print, Reset and Exit.

  c) Textbox (blue part), including Status, Information, Starting Time, Test Result, Conclusion, Test Parameter and Related Information.

Note: Your computer system edition will be Windows 98 and the Later.

2. Important steps



A. Power on

Connect your analyzer to the power supply; push the “Switch” at the back of the analyzer to “On”, your analyzer starts to work and the LCD will in sequence display battery voltage, charge current and discharge current. When “MODE” appears, you can set the parameter. If the LCD displays “CH/DCH NO PASS”, it means the charge or discharge function of the tested battery is unqualified and needs to be disposed of.

Note: Always use the original power supply and power off when changing batteries.

B. Make a note (if necessary)

Find out “Related Information” from the textbox:

User: You can input the battery type and the manufacturer.

Checker: You can input the checker’s name or code number can be input.

Remarks: You can input the reason to test the battery or other necessary information.

C. Setting specification

When “MODE” appears on the LCD, click the shortcut key “Open Channel” in the

interface or find out “Channel” in the main menu, drop down the menu, click “Open Channel”. (Note: The COM of the PC and the COM of your analyzer must match. Click “Port Setting” from “Channel” in the main menu to choose a suitable “COM” among 4 COMs.) “COM Status” will be “Opened” and “Test Status” will be “Initialization”. If there is no display, Please refer to “Solving Problems”.

a) Setting specification

Click the shortcut key, “Set Parameter” or click “Instrument Setting” in the “Setting” from the main menu, and the “Parameter Setting” dialog box pops out. In this dialog box, 5 items are available. You can set the related parameters for the battery to be tested.

1) Setting battery type (Li-ion or Ni-MH)

Find out “Battery Type” and you can choose Li-ion or Ni-MH according to your battery type (Li-ion to Li-ion and Li-polymer; Ni-MH to Ni-MH and Ni-Cd).

2) Setting battery normal voltage

Set a data as told on your battery label.

3) Setting battery normal capacity

Input the data as told on the battery label. And you can compare it to the actual capacity that your analyzer will check out.

Note: The normal capacity on the label does not mean the one checked out.

4) Choosing overcharging test

Find out “Overcharging Test”, click it and a hook appears in the option frame. It means overcharging protection function will be tested.

5) Setting testing mode

Find out “Model”, and choose among the following testing methods:

(1) Q. Test = quick test, it will test the voltage, the resistance, the short circuit protection, overcharging/ over discharging protection. If the voltage of the battery to be tested is under 4V, the battery will be charged to 4V.

(2) S. Test = standard test, it will tests capacity. Under normal circumstances, it takes 1.5 to 2 hours to run a S. Test.

(3) Reactivating, it can reactivate a battery when a battery is left unused for a long period of time. It will run a charging and discharging cycle which takes about 3 to 5 hours.

(4) Q. Charge = quick charge, charging a battery at fast speed.

(5) Q. Discharge = quick discharge, discharging a battery at fast speed.

b) After setting parameter, click “OK” and your analyzer starts to work.

c) View certain results during the standard test course

1) View certain results from the CH/DISC curve.

Click the shortcut key, “Browse Curve” or click “Browse Curve” in the “Record” from the main menu, and “CH/DISC Curve” pops out. Click any point on the curve, and the relative information about charging and discharging voltage and time of this point will be indicated at the bottom of the graph.

2) View certain results from the meters.

Find out “Test Parameter” from the textbox. This textbox displays voltage, current and time at present. Besides in figures, voltage and current are also

displayed in meters so that the board is more visual for users to view. Time is in figures, however, can it be recorded only when charging or discharging the battery. The charging or discharging time displays in subsection.

Note 1: The transparent cover should be locked well to avoid burst causing personal injury when testing overcharging protection.

Note 2: Setting parameters will be effective only when "Test Status" in "Status" is "Initialization"; setting during testing course will be meaningless.

D. View the results

When your analyzer finishes testing, the monitoring board will directly display all the relative results.

- Find out "Test Result": Six results are in this textbox. Resistance and capacity are in figures. The result of protection function is displayed through red and green lights as well as the texts so that it is more visual for users to view.
- Find out "Conclusion": according to the testing data, PASS or NO PASS will show up.

E. After view the results, you can choose to

a) Save the record for your later check.
   1) Click the shortcut key, "Save Record" or click "Save Record" in "Record" from the main menu, all the information in the textbox (excluding "Status") will be saved.
   2) Click "Browse Record" or click "Record Browse" in "Record" from the main menu, "Browse Record" dialog box pops out and you can check if the information is well saved. And here, you can also directly choose to:
      - Print the saved information. Click "Print".
      - Clear the saved information. Click "Clear Record".
      - Exit from "Browse Record" dialog box. Click "Exit".

b) Print the record.

Click the shortcut key, "Print" or click "Print" in "File" from the main menu. "Print" dialog box pops out and you can choose to:

- Print the saved information. Click "Print".
- Save the saved information into other file in your computer. Click "Save As…".
- Exit from "Print" dialog box. Click "Exit".

Note: "Starting Time" in the textbox records the time when your analyzer starts to test the battery. The time is in synchronization with your computer clock, so you cannot modify it and the recorded testing result will be singular because of the record of time.

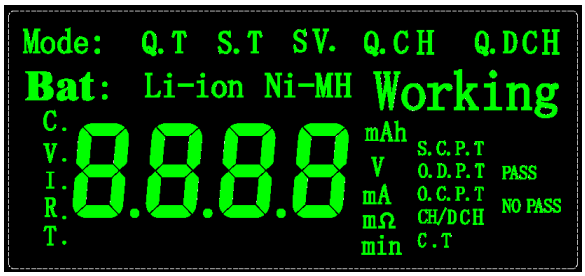
F. When you finish step E), it is called a round of integral testing process

a) If you want to continue to test with your computer, click the shortcut key, "Reset" or click "Setting" in the main menu, drop the menu down, click "Reset"; or else

b) Click "Close Channel" from "Channel" in the main menu or click the shortcut key, "Exit" or click "Exit" in the "File" from the main menu.

Button Operation

If you don't use computer, button operation is also available. Please follow the important steps:



A. Power on

Connect your analyzer to the power supply; push the "Switch" at the back of your analyzer to "On", and then your analyzer starts to work.

Note: Always use the original power supply and power off when changing batteries.

B. Setting specification

After powering on, the LCD will in sequence display battery voltage, charge current and discharge current. When the "MODE" appears, user can set the parameter. If charge or discharge function is unqualified, the LCD will display "CH/DCH NO PASS".

Press "Function" button, the data will change among MODE, BAT=battery, C=capacity and V=voltage.

When one of these four items twinkles, press "Select" button and set the relative parameters.

a) Setting battery type (Li-ion or Ni-MH)
   Find out "Battery Type" and you can choose Li-ion or Ni-MH according to your battery type (Li-ion to Li-ion and Li-polymer; Ni-MH to Ni-MH and Ni-Cd).
b) Setting battery voltage
   Set a data as told on your battery label.
c) Setting battery capacity
   Input the data as told on the battery label. And you can compare it to the actual capacity that your analyzer will check out.
   Note: The capacity on the label does not mean the one checked out.
d) Setting testing mode
   1) Q. Test = quick test, it will test the voltage, the resistance, the short circuit protection, overcharging/ over discharging protection. If the voltage of the battery to be tested is under 4V, the battery will be charged to 4V. Under normal circumstances, it takes about 30 seconds to run a Q. Test.
   2) S. Test = standard test, it will run a full test on battery. Besides the tests run in Q. Test, it also tests capacity. Under normal circumstances, it takes 1.5 to 2 hours to run a S. Test.
   3) Reactivating, it can reactivate a battery when a battery is left unused for a long period of time. It will run a charging and discharging cycle which takes about 3 to 5 hours.

4) Q. Charge = quick charge, charging a battery at fast speed.
5) Q. Discharge = quick discharge, discharging a battery at fast speed.

After you set the parameters, press “Enter” and the analyzer starts to work while LCD displays “Working”.

C. View the results

During the course of testing, press “Function” and LCD will display the following words; press “Select”, you can check out the following results:

D. (Test Capacity)	Unit: mAh	Data displayed when S.test
V. (Currently Voltage)	Unit: V	
I. (Working Current)	Unit: mA	No data when Q. Test
R. (Battery Resistance)	Unit: mΩ	Data displayed when Q.Test
T. (Working Timer)	Unit: min	Data displayed when Charging or Discharging
S.C.P.T. (Short Circuit Protect test)	PASS or NO PASS	Result showed when Q.Test
O.D.P.T. (Over Discharge Protect test)	PASS or NO PASS	Result showed when Q.Test
O.C.P.T. (Over Charge Protect Test)	PASS or NO PASS	Result showed when Q.Test
CH/DCH. (Function Of Charge/Discharge)	PASS or NO PASS	Result showed when Q.Test
T.C. (Capacity Test)	PASS or NO PASS	Result showed when S.Test

E. Print the data

When your analyzer finishes testing (the relative data twinkles on the LCD screen), press “Print” and the mini-printer will print the result and “Print” appears on the LCD screen.

Technical Parameters

Battery Types: Ni-MH and Ni-CD 2.4V、3.6V、4.8V、6.0V、7.2V;
Li-ion and Li-Polymer 3.6V、7.2V;
Input Voltage: 110V～220V（AC）; ±10%
Output Current: ≤2500mA
Size: 270×170×80mm
Gross Weight: 2kg
Working Temp.: —0℃～ +45℃
Humidity: ≤85%RH

Testing Range	Differentiation	Step	Precision	Repetition
(V) 0～10V	0.01V	0.01V	±(1%RD+0.1%FD)	≤0.01V
(C) 50～2500mA	1mA	3mA	±(0.3%RD+0.1%FD)	≤6mA

Warranty

All Smart Battery Analyzer parts are under warranty for twelve months at normal operation.

Solving Problems

Problem Features	Possible Causes	Solution
Unable to power on	The power supply is not well connected or no power supply is connected.	Check your power supply connection or change another socket.
Your analyzer cannot test the charging or discharging function but repeat voltage on LCD screen while it gives a self test.	A). The adapter is not placed properly into the bay or the probes fail to connect well with the metals of the battery. B). The battery is dead.	A). Place the adaptor properly into the bay or readjust the probes to contact well with the metals of the battery. B). Dispose of your battery properly.
The relative parameters of the battery cannot be sent to the PC-interface.	A). Your serial cord is not connect or not well connected. B). The COM of your analyzer and the PC are not matched.	A). Reconnect serial cord well. B). Change another COM from the PC-interface.