

# **Auto Battery Analyzer**

## **Item: BA1000**

## **User's Manual**



# 1 Product Summary

## 1.1 Product Profile

BA1000 Battery Tester adopts currently the world's most advanced conductance testing technology to easily, quickly and accurately measure the actual cold cranking amps capability of the vehicle starting battery, Health state of the battery itself, and common fault of the vehicle starting system and charging system, which can help maintenance personnel to find the problem quickly and accurately, thus to achieve quick vehicle repair.

1. Test all automotive cranking lead acid battery, including ordinary lead acid battery, AGM flat plate battery, AGM spiral battery, and Gel battery, EFB battery, etc.
2. Directly detect bad cell battery.
3. Polarity reverse connection protection, reverse connection will not damage the tester or affect the vehicle and battery.
4. Directly test the battery with loss of electricity, no need to full charge before testing.
5. Testing standards include currently the world's majority of battery standards, CCA, BCI, CA, MCA, JIS, DIN, IEC, EN, SAE, GB.
6. Support multi-languages, customer can select different language package, which includes: English, Spanish, French, German, Dutch, etc. Other languages can also be customized according to user's need.

## 1.2 Product Function

Main functions of BA1000 battery tester include: battery test, cranking test, charging test and other additional functions.

**Battery test** is mainly targeted to analyze the battery Health status to calculate the actual cold cranking capability of the battery and the aging extent, which provide reliable analysis evidence for the test and maintenance of the battery. It notifies the user to replace battery in advance when the battery getting aged.

**Cranking test** is mainly to test and analyze the starting motor. Through testing the actual required cranking current and cranking voltage of the starting motor, it can find out whether the starting motor works fine. There are several reasons why the starting motor is abnormal: lubricating system fault causing the starting loaded torque increasing or rotor friction of the starting motor causing the increasing friction of the starting motor itself.

**Charging test** is to check and analyze the charging system, including generator, rectifier, rectifier diode, etc., thus to find out whether the output voltage of the generator is normal, the rectifier diode works fine and the charging current is normal. Suppose one of the above mentioned parts is not in normal situation, it will lead to over charge or incomplete charge of the battery, thus the battery will be quickly damaged and also greatly shorten the using life of other loaded electrical appliance.

**Additional functions** include: Set language, voltmeter and screen brightness adjustment.

## 1.3 Technical Parameters

1. Cold Cranking Amps Measure Range:

Measure Standard	Measure Range
CCA	100-2000
BCI	100-2000
CA	100-2000
MCA	100-2000
JIS	26A17--245H52
DIN	100-1400
IEC	100-1400
EN	100-2000
SAE	100-2000
GB	30-220

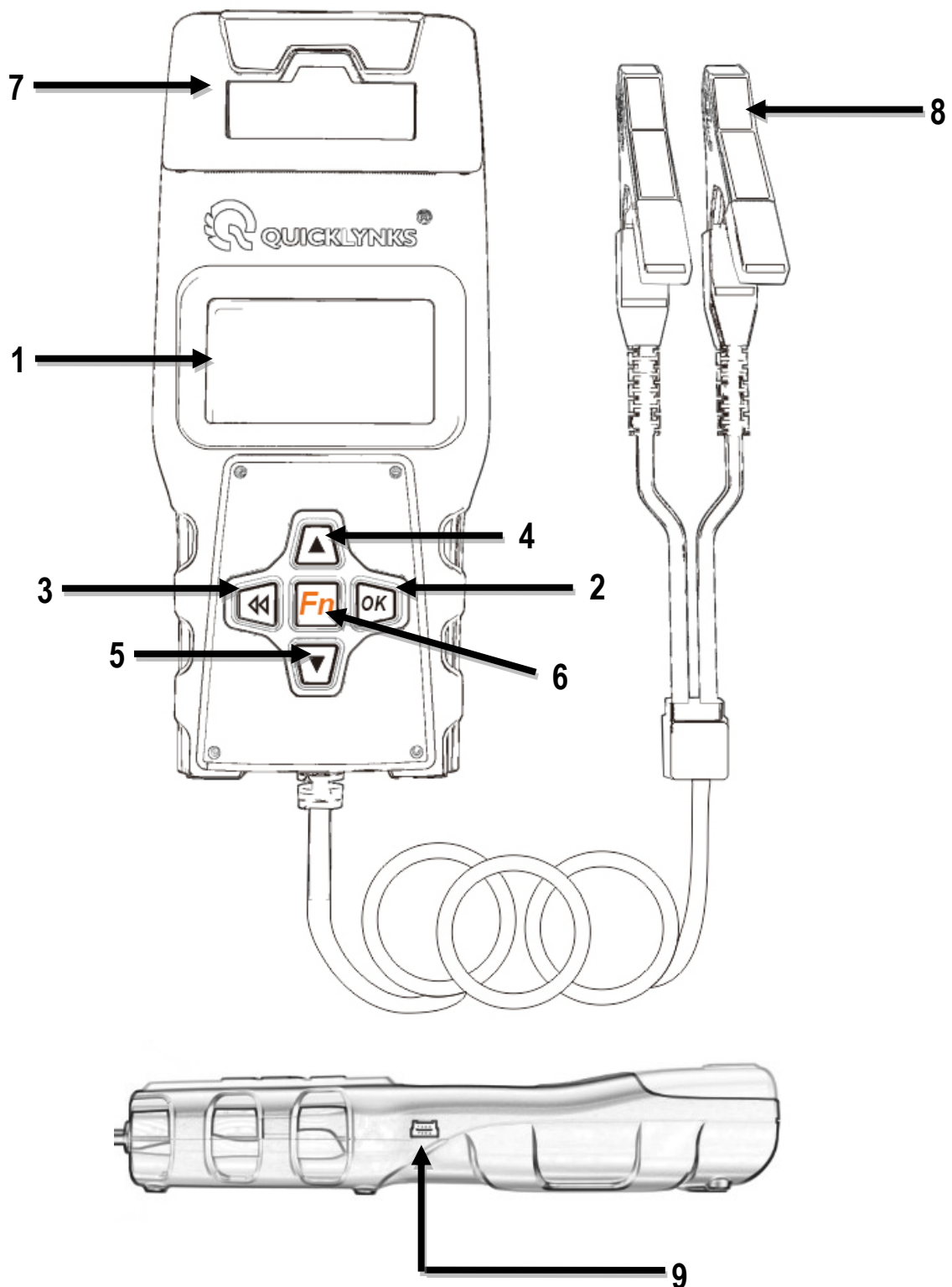
2. Voltage Measure Range: 8-30V DC

### 1.4 Working Environment Requirement

Working Environment Temp.: -20°C-60°C

It is applicable for automotive manufacturers, automotive maintenance and repair workshops, automotive battery factories, automotive battery distributors, and educational organizations, etc.

## 2 PRODUCT INFORMATION



## 2.1 Tool Description

1. LCD Display-- Indicates test results. Backlit, 128 x 64 pixel display with contrast adjustment.
2. OK key-- Confirms a selection (or action) from a menu.
3. Exit key-- Cancels a selection (or action) from a menu or returns to the menu.
4. Up key-- Moves up through menu and submenu items in menu mode. When more than one screen of data is retrieved, moves up through the current screen to the previous screens for additional data.
5. Down key-- Moves down through menu and submenu items in menu mode. When more than one screen of data is retrieved, moves down through the current screen to next screens for additional data.
6. Fn key-- Press it to enter the function for quick test customized
7. Printer-- Choose the function of PRINT DATA and confirm it, then print the testing result.
8. Battery Clips-- Connect to the Positive and negative electrodes of auto battery.
9. Mini-USB Socket (in the side of the product)-- Connect to computer for print via USB cable.

## 2.2 Product Specifications

- 1). Display: large, 128\*64 easy to read LCD, backlit
- 2). Operating Temperature: 0 to 50°C (32 to 122 F°)
- 3). Storage Temperature: -20 to 70°C (-4 to 158 F°)
- 4). Power—provided via vehicle battery
- 5). Dimensions:

Length	Width	Height
210 mm ( 8.3")	90 mm ( 3.54")	40mm (1.57")
- 6). Weight: 700g

## 2.3 Accessories Included

- 1) User Manual -- Instructions on tool operations
- 2) USB cable -- Provides link to tool and computer for print..
- 3). CD--- Print software inside.
- 4). Thermal paper---2 rolls

## 2.4 Product Setup

The tool allows you to make the following adjustments and settings:

- 1) Language: Selects desired language.
- 2) Fn settings: Set the One-Click-Key function..
- 3) Contrast adjustment: Adjusts the contrast of the LCD display.

4) Tool information: The tool show the version.

## To enter the system setup menu

From main menu, select the System Setup and press OK.

System Setup
Language
Fn settings
Contrast
Tool Information

### Language:

1) From Tool Setup menu, use OK button to select Language

Language
English
French
German
Spanish
Italian
Dutch

2) Use UP and DOWN button to select the desired language and press OK button to save your selection and return to previous menu.

### Fn Setting:

2) From Tool Setup menu, use OK button to select


Fn Setting
Voltmeter
Quick Test

2) Use UP and DOWN button to select the desired language and press OK button to save your selection and return to previous menu.

### Contrast

1) From Tool Setup menu, use OK button to select contrast.

2) Use UP and DOWN button to select the contrast value and press OK button to save your selection and return to previous menu.

Contrast
38%


## Tool Information

From Tool Setup menu, use OK button to select Tool Information

Press exit to return the previous menu.

Tool Information
Software Version: 1.00
Hardware Version: 1.00

## 3. Operation and Test

After connect the tool to vehicle battery, tester displays the tester model , version and batter voltage.

<b>Auto battery tester</b> <b>BA1000</b>
<b>Version:1.0</b>
<b>Voltmeter: 12.40V</b>

### 3.0 FN key

There is One-Click-Key to test the battery status as setting

- 1) Voltmeter
- 2) Battery Test as last testing setting
- 3) More...



Tester will display the following contents in a sequence, select accordingly.

### 3.1 Battery test

Main Menu
1.Battery Test
2.Cranking Test
3.Charging Test
4.Review Data
5. Print Data
6.System Setup

Now the tester detects the surface charge has been eliminated, turn lights off as prompted, then press OK key. The tester will recover automatic test

#### Select Battery Type

After the battery charge status selected, tester will prompt to select battery type, i.e. Regular Flooded, AGM Flat Plate or AGM Spiral, Gel and EFB battery. Press UP/DOWN key to select battery type, then press OK key to confirm

Battery Type
1.Regular Flooded.
2. AGM Flat Plate.
3.AGM spiral
4.GEL
5.EFB

#### Battery System Standard and Rating

BA1000 battery tester will test each battery according to the selected system and rating.

Use UP/DOWN key to select according to the actual system standard and rating marked on the battery. Use UP/DOWN key to select according to the actual system standard and rating marked on the battery. See in the below picture, the arrow indicated location.



CCA: Cold Cranking Amps, specified by SAE&BCI, most frequently used value for starting battery at 0°F (-18°C).

BCI: Battery Council International standard

CA: Cranking Amps standard, effective starting current value at 0°C

MCA: Marine Cranking Amps standard, effective starting current value at 0°C.

JIS: Japan Industrial Standard, displayed on the battery as combination of the numbers and letters, e.g. 55D23,80D26.

DIN: German Auto Industry Committee Standard

IEC: Internal Electro technical Commission Standard

EN: European Automobile Industry Association Standard

SAE: Society of Automotive Engineers Standard

GB: China National Standard

<b>Select Input</b>
CCA

**Rating range as following:**

Measure Standard	Measure Range
CCA	100-2000
BCI	100-2000
CA	100-2000
MCA	100-2000
JIS	26A17--245H52
DIN	100-1400
IEC	100-1400
EN	100-2000
SAE	100-2000
GB	30-220

Input correct test standard and rating, press OK key, tester starts to test, and dynamic interface "TESTING" prompted. See below:

<b>Setting Rate</b>
500 CCA

It takes around 3 seconds to display the battery test result.

**Battery Test Result**

Battery test result includes 5 types as following:

**1) Good Battery**

Health:96%	490CCA
Charge:98%	12.64V
Internal R=6.1mΩ	
Rated: 500A	
GOOD BATTERY	

The battery is without any problem, please be relaxed to use!



**2) Good, Recharge**

Health:78%	440CCA
Charge:30%	12.20V
Internal R=7.2mΩ	
Rated: 500A	
GOOD, RECHARGE	

Good battery but low current, recharge before using.

**3) Replace**

Health:46%	490CCA
Charge:80%	12.68V
Internal R=18.1mΩ	
Rated: 500A	
REPLACE	

The battery is near to or already reached the end of the using life, replace battery, otherwise, bigger danger will be followed.

**4) Bad Cell, Replace**

Health:0%	0CCA
Charge:20%	10.64V
Internal R=45.2mΩ	
Rated: 500A	
BAD CELL, REPLACE	

Battery interior damaged, bad cell or short circuit, replace battery.

**5) Charge, Retest**

Health:39%	310CCA
Charge:20%	12.08V
Internal R=30.1mΩ	
Rated: 500A	
CHARGE-RETEST	

Unstable battery shall be recharged and retested to avoid error. If same test result appears after recharge and retest, the battery is regarded as damaged, replace the battery.

**3.2. Cranking Test**

Tester prompts as following:

<b>Cranking Test</b>
Start Engine

Starting the engine as prompted, tester will automatically complete the cranking test and display the result.

<b>Cranking Test</b>
RPM Detected

Normally, cranking voltage value lower than 9.6V is regarded as abnormal and it is OK if it is higher than 9.6V.

Test result of the tester includes actual cranking voltage and actual cranking time.

<b>Cranking Test</b>	
Time	780ms
Cranking	Normal
	10.13V

When cranking test is abnormal, battery test result will also be displayed at the same time.

<b>Cranking Test</b>	
Times	1020ms
Cranking	Low
	10.13V

This is for the convenience of the maintenance personnel to quickly know the whole state of the starting system according to the data.

After testing finished, do not shut down the engine, press OK key to OK Charging Test.

### 3.3 Charging System

Please choose "Charging Test" and press OK key to start the charging test.

NOTE: Do not shut down the engine during the test. All electrical appliance and device are in OFF state. Turn on/off any electrical appliance in the vehicle during the test will affect the accuracy of the test result.

Tester will do the following tests in a sequence:

<b>Charging Test</b>
Loaded Testing ****

Loaded Volt Test takes approx. 3 seconds, then it hints "Step on accelerator to increase engine rotating speed"

<b>Charging Test</b>
Increasing RPM to 2500 r/min And keep it 5 seconds. Press OK to continue.

Operate accordingly to increase the engine rotating speed to 2500turns or above, and keep for 5 seconds.

Tester starts the charging volt test after increase rev detected.

<b>Charging Test</b>
Testing ****

After the test finished, tester displays the effective charging volts, ripple test result and charging test result.

<b>Charging Test</b>	
Loaded	14.16V
Unloaded	14.39V
Replace	15mV
<b>Charging</b>	<b>Normal</b>

NOTE: If no increase rev detected, it shall be the fault of generator regulator or connection with battery failed. Tester will try 3 times to further detect, if still failed, it will skip the increase rev detect and the test result displays "No Volt Output". See below:

Check the connection between generator and battery, then retest.

Charging Test Result:

1) Charging Volt: Normal

Charging system shows the generator output normal, no problem detected.

2) Charging Volt: Low

Charging volt of the charging system is low.

Check drive belt of the generator whether slip or running off. Check the connection between generator and battery is normal or not.

If both of the drive belt and the connection are in good condition, follow the manufacturer's suggestion to eliminate generator fault.

3) Charging Volt: High

Generator output volt is high.

Since most of the vehicle generators are using internal regulator, the generator assembly has to be replaced.(Some old style cars are using external regulator, then directly replace the regulator.)

The normal high volt of the voltage regulator is maximum 14.7±0.5V.If charging volt is too high, it will overcharge the battery. Therefore the battery life will be shortened and troubles will be caused.

4) No Volt Output:

No generator volt output is detected. Check the generator connection cable and the belt whether they are normal.

5) Diode Test:

Through the test of charging current ripple, tester will find out whether the diode is normal or not. When ripple volt is too high, it proves at least one diode is damaged. Check and replace the diode.

Till now, all tests have been done.

### 3.4 Review Data

Choose the function of Review Data

<b>Main Menu</b>
1.Battery Test
2.Cranking Test
3.Charging Test
4.Review Data
5. Print Data
6.System Setup

Check the history of battery testing result

Health:96%	490CCA
Charge:98%	12.64V
Internal R=6.1mΩ	
Rated: 500A	
GOOD BATTERY	

### 3.5 Print Data

1. Choose the function of Print Data and press OK.

<b>Main Menu</b>
1.Battery Test
2.Cranking Test
3.Charging Test
4.Review Data
5. Print Data
6.System Setup

2.The Printer will print the testing result as below:

```
Battery Test
Health:96%      490CCA
Charge:98%      12.64V
Internal R=6.1mΩ
Rated: 500A
      GOOD BATTERY

Cranking Test
Cranking Time: 379ms
Cranking Voltage: NORMAL
11.87V

Charging Test
Loaded 12.09 V
Unloaded 12.29V
Ripple 0mV
CHARGING LOW
```

4.Press exit to return

## 4.WARRANTY AND SERVICE

### 4.1 Limited One Year Warranty

We warrants to its customers that this product will be free from all defects in materials and workmanship for a period of one (1) year from the date of the original purchase, subject to the following terms and conditions:

1. The sole responsibility of us under the Warranty is limited to either the repair or, at the option of us, replacement of the Scan Tool at no charge with Proof of Purchase. The sales receipt may be used for this purpose.
2. This warranty does not apply to damages caused by improper use, accident, flood, lightning, or if the product was altered or repaired by anyone other than the Manufacturer's Service COK.
3. We shall not be liable for any incidental or consequential damages arising from the use, misuse, or mounting of the Scan Tool. Some states do not allow limitations on how long an implied warranty lasts, so the above limitations may not apply to you.

### 4.2 Service Procedures

For technical support, please contact your local store or distributor. If it becomes necessary to return the code reader for repair, contact your local distributor for more information.