

## Car & Motorcycle Battery Tester



# Table of Contents

<b>1.Product Summary</b>	1
1.1 Product Profile	1
1.2 Product Function	1
1.3 Technical Parameters	2
1.4 Working Environment Requirement	2
<b>2. Product Information</b>	3
2.1 Tool Description	3
2.2 Product Specifications	3
2.3 Accessories Included	4
2.4 Tool Setup	4
2.5 About	6
<b>3. Car Battery Test</b>	7
3.1 Battery Test in vehicle	7
3.2 Battery out of vehicle test	12
Motorcycle Battery Test	16
3.3 Waveform	19
3.4 Review	21
3.5 Print	23
<b>4. Update Mode</b>	24
<b>5. Service Procedures</b>	25

# 1 Product Summary

## 1.1 Product Profile

BT901 Battery Tester adopts the state-of-the-art conductance testing technology in the world to easily, quickly and accurately measure the actual cold cranking amps capability of the vehicle starting battery, healthy 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, etc.
2. Directly detect bad cell battery.
3. Feature reverse polarity protection; reverse connection may not damage the tester or affect the vehicle and battery.
4. Directly test the battery with loss of electricity, full charge is not required before testing.
5. Testing standards cover the majority of world's battery standards, such as CCA, BCI, CA, MCA, JIS, DIN, SAE.
6. Support multi-languages, customer can select different language package, which includes:  
Chinese simple, Dutch, English, French, German, Italian, Japanese, Korean, Portuguese, Polish, Russian, Spanish.
7. Upload the recorded test data to computer (windows) and print it out.
8. Life time update free by updating tool VEHLINK from [www.vehlive.com](http://www.vehlive.com) If you have any good idea or problems, please contact us by email: [vehlive@qq.com](mailto:vehlive@qq.com).

## 1.2 Product Function

BT901 battery tester features the following functions: battery test, cranking test, charging test and other additional functions.

Battery test mainly aims to analyze the battery healthy status to calculate the actual cold cranking capability of the battery of the battery and the aging extent, which provide reliable analysis evidence for the test and maintenance of the battery. It may notify the user to replace battery in advance when the battery gets aged.

Cranking test is used to test and analyze the starting motor. Testing the actual required cranking current and cranking voltage of the starting motor is helpful to determine whether the starting motor works properly or not. If the starting malfunction may cause an increased starting loaded torque; or rotor friction of the starting motor generates an 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 properly and the abnormal, it will lead to over charge or incomplete charge of the battery, thus cause quick damage to the battery and greatly shorten the life of other loaded appliance.

### 1.3 Technical Parameters

#### 1. Cold Cranking Amps Measurement Range:

Measurement Standard	Measurement 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

#### 2. Voltage Measurement Range : 6-16V DC

### 1.4 Working Environment Requirement

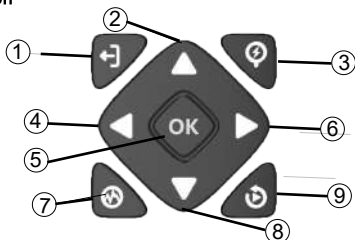
Working Environment Temp: 0°C – 50°C/ -32°F – 122°F

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

## 2. Product Information

### 2.1 Tool Description

- ①ESC
- ②UP
- ③Battery Test
- ④Left
- ⑤OK
- ⑥Right
- ⑦Waveform
- ⑧Down
- ⑨Play Back



- 1. ESC Button:** Returns to the previous screen.
- 2. Up Button:** Moves up through menu and submenus. Moves to previous screen if information covers more than one screen.
- 3. Battery Test Button:** Quickly enter the battery test and analyze the health status of the battery.
- 4. Left Button:** Moves to previous screen if information covers more than one screen.
- 5. OK Button:** Confirms a selection from a menu.
- 6. Right Button:** Moves to next screen if information covers more than one screen.
- 7. Waveform Function Button:** Enter the ripple detection function and display the voltage waveform.
- 8. Down Button:** Moves down through menu and submenus. Moves to next screen if information covers more than one screen.
- 9. Play Back Button:** Quickly enter playback and replay the state just now.

### 2.2 Product Specifications

- 1. Display: LCD
- 2. Operating Temperature: 0°C – 50°C/ 32°F – 122°F
- 3. Storage Temperature: -20°C – 70°C/ -4°F – 158°F
- 4. Power: Provided via cable from car battery
- 5. Dimensions:

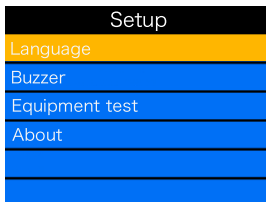
Length	Width	Height
178mm(7")	86.5mm(3.4")	28mm(1.1")

## 2.3 Accessories Included

1. 1 x Type-C data cable
2. User's Manual

## 2.4 Tool Setup

From the startup screen, or press **ESC** button to enter Main Menu. Press **MOVE** button to select the **[Setup]** function in the Main Menu and press **OK** button, The screen will display the interface as shown below:



The Tool allows you to make the following adjustments, settings:

1. **Select language:** Selects desired language.  
Press **MOVE** key to choose **[Language]** and press **OK** button, the screen will display the interface as shown below:



You can press **MOVE** key to select any language and press **OK** button to confirm. The system will convert to the chosen language interface at once.

2. **Beep**: ON/OFF the Beeper.

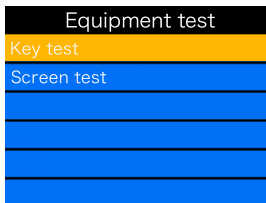
Press **MOVE** key to choose [buzzer] and press **OK** button, the screen will display the interface as shown below:



You can press **OK** button to cover ON or OFF, Press **ESC** key to return.

3. **Equipment test**: Keyboard, LCD display detection.

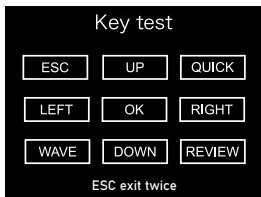
Press **MOVE** key to choose [Equipment test] and press **OK** button, the screen will display the interface as shown below:



#### A. Key test

The key test function verifies if the keys are functioning properly.

1. Use the **MOVE** button to select key test from the Equipment test menu, and then press the **OK** button.
2. Press any key to start test. When you press a key, the key name should be observed on the display. If the key name does not show up, then the key is not functioning properly, the screen will display the interface as shown below:



3. Double press **ESC** to return to previous menu.

## B. Screen test

The Screen test function checks if the LCD display is working normally.

1. From Setup screen, use **MOVE** button to select Equipment test, and press the **OK** button.
2. Select Screen test from Equipment test menu and press the **OK** button to start test, Press **ESC** button to return.
3. Look for missing spots in the colour bar, white, black LCD display.
4. When completed, press **ESC** button to exit.

## 4. About

From the startup screen, or press **ESC** button to enter Main Menu Press **MOVE** button to select the **[About]** function in the Main Menu and press **OK** button, The screen will display the interface as shown below:



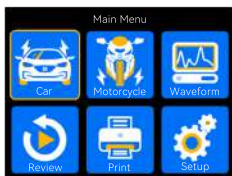
Press **ESC** to return the previous menu.



### 3 Car Battery Test

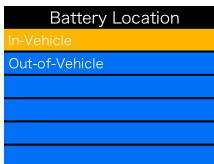
After entering battery test program, tester displays Main Menu, Tester will display the following contents in a sequence, select accordingly.

From the startup screen , or press ESC button to enter Main Menu, the screen will display the interface as shown below:



#### Battery In-vehicle or Out-of-Vehicle

Press **MOVE** key to select the battery location, in vehicle or out of vehicle, then press **OK** key to confirm.



#### 3.1 Battery Test in vehicle

When surface charge detected by the tester, it prompts “Surface charge, turn lights on”, Turn lights on as prompted to eliminate battery surface charge, tester will then display the following messages in a sequence.

### Battery test

1. Check surface charge, turn lights on.
2. Take headlights on about 10 seconds.
3. Turn lights off.

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 **MOVE** key to select battery type, then press OK key to confirm.

### Battery System Standard and Rating

**BT901** battery tester each battery according to the selected system and rating.

Use **MOVE** key to select according to the actual system standard and rating marked on the battery.

See in the below picture.



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 Electron technical Commission Standard.

EN: European Automobile Industry Association Standard.

SAE: Society of Automotive Engineers Standard.

From the **[Select Type]** screen, Press **MOVE** key to select the Standard, then press **OK** key to confirm.



Rating range as following:

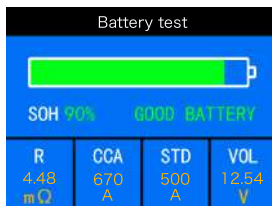
Measurement Standard	Measurement Range
CCA	5-3000
BCI	5-3000
CA	5-3000
MCA	5-3000
JIS	26A17-245H52
DIN	5-3000
IEC	5-3000
EN	5-3000
SAE	5-3000

Input correct test standard and rating, press **OK** key, tester starts to test, and dynamic interface “Under measurement ...” prompted. See bellow:



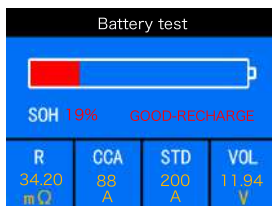
It takes around 1 seconds to display the battery test result.

### 1 Good Battery



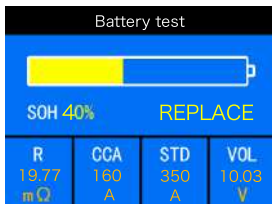
The battery is without any problem, please be relaxed to use.

### 2 Good, Recharge



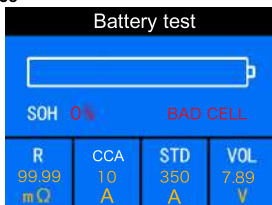
Good battery but low current, recharge before using.

### 3 Replace



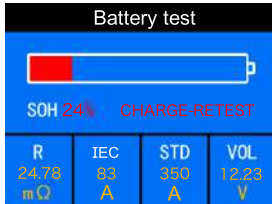
The battery is near to or already reached the end of the using life, replace battery otherwise, bigger danger will be followed.

### 4 Bad cell, Replace



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

### 5 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.

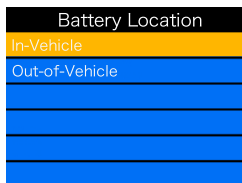
Attention: If “Replace” resulted from In-Vehicle mode, it might be the reason that vehicle cable is not well connected with the battery, Ensure to cut off the cable and retest the battery under Out-of-Vehicle before making a decision to replace battery.

NOTE: After testing, if need to **ESC**, press **ESC** key to directly Exit to the startup interface.

### 3.2 Battery out of vehicle test

Out-of-Vehicle means battery is not connected with any of the vehicle loaded, i.e. battery connection is cut off.

From the startup screen, or press **ESC** button to enter Main Menu. Press **MOVE** key to select the battery location, in vehicle or out of vehicle, then press **OK** key to confirm.



#### 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 **MOVE** key to select battery type, then press OK key to confirm.

#### Battery System Standard and Rating

**BT901** battery tester each battery according to the selected system and rating.

Use **MOVE** key to select according to the actual system standard and rating marked on the battery.

See in the below picture .



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 Electron technical Commission Standard.

EN: European Automobile Industry Association Standard.

SAE: Society of Automotive Engineers Standard.

From the **[Select Type]** screen, Press **MOVE** key to select the Standard, then press **OK** key to confirm.



Rating range as following:

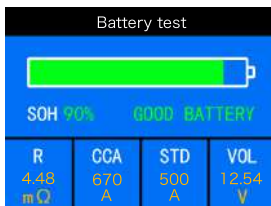
Measurement Standard	Measurement Range
CCA	5-3000
BCI	5-3000
CA	5-3000
MCA	5-3000
JIS	26A17-245H52
DIN	5-3000
IEC	5-3000
EN	5-3000
SAE	5-3000

Input correct test standard and rating, press **OK** key, tester starts to test, and dynamic interface “Under measurement ...” prompted. See bellow:



It takes around 1 seconds to display the battery test result.

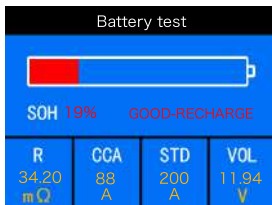
### 1 Good Battery





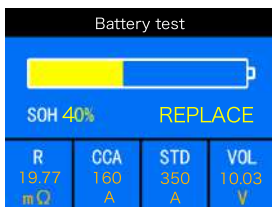
The battery is without any problem, please be relaxed to use.

## 2 Good, Recharge



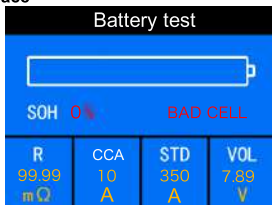
Good battery but low current, recharge before using.

## 3 Replace



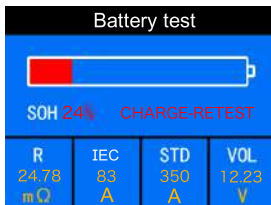
The battery is near to or already reached the end of the using life, replace battery otherwise, bigger danger will be followed.

## 4 Bad cell, Replace



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

## 5 Charge, Retest

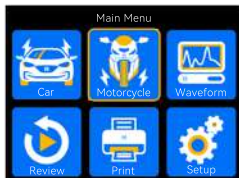


Unstable battery shall be recharged and retested to avoid error. If same test result appears after recharge and retest, the battery is regarded as damaged, replace the battery.

### Motorcycle Battery Test

It can make sure the battery status, including voltage, CCA, electronic resistance, rated CCA, charging value, healthy value and testing result in one second. From the startup screen, or press ESC button to enter Main Menu. The screen will display

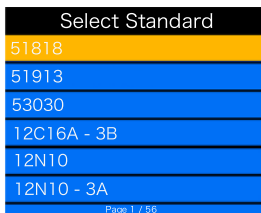
1.the interface as shown below:



Select rated capacity



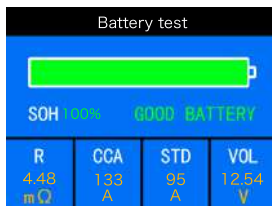
## Test Standard Selection



2. Use **MOVE** key to select Motorcycle battery model, The press **OK** key, the testing result will show one of these, as below: (Battery test result includes 5 types as following: )

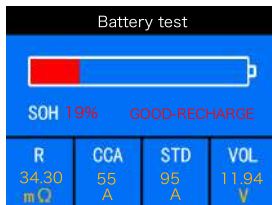
It takes around 1 seconds to display the battery test result

### 1 Good Battery



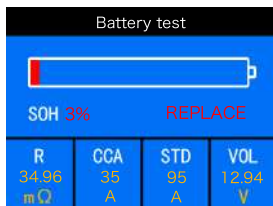
The battery is without any problem, please be relaxed to use.

### 2 Good, Recharge



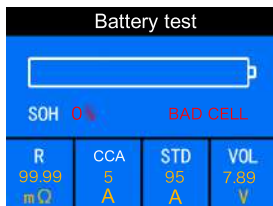
Good battery but low current, recharge before using.

### 3 Replace



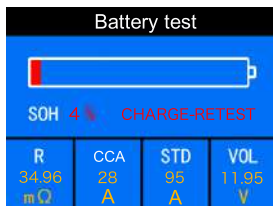
The battery is near to or already reached the end of the using life, replace battery otherwise, bigger danger will be followed.

### 4 Bad cell , Replace



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

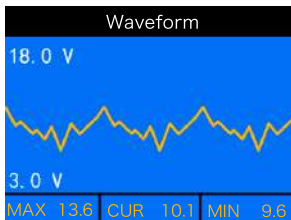
### 5 Charge, Retest



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.

### 3.3 Waveform

press WAVEFORM FUNCTION button, The screen will display the interface as shown below:



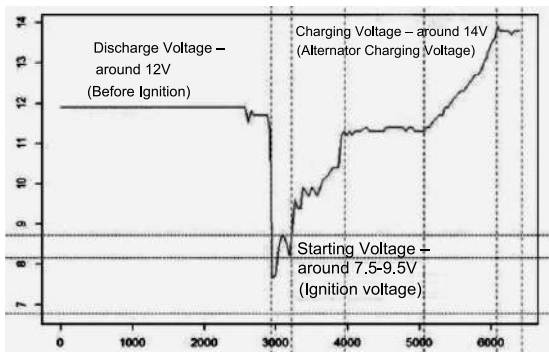
MAX: Maximum Voltage during Ignition

CUR: Current Voltage

MIN: Minimum Voltage during Ignition

The waveform will stay in static until there's changes in the voltage changes detected.

Various vehicle voltage analyses



- Discharge Voltage:** When the ignition OFF, engine OFF (Over 20 Minutes), the Discharge Voltage should be around 12V. If the discharge voltage is lower than 11V, it will be hard to turn the ignition ON. If the discharge voltage continuously stay under 11V, it means the battery is aging and replacement is needed.
- Starting Voltage:** During ignition, the voltage will drop to a certain point, at this minimum point is Starting Voltage (Around 7.5- 9.5V). If the Starting Voltage continuously stay under 7.5, it means battery capacity is low and needs to be replaced.
- Charging Voltage:** When the ignition ON, engine ON. The alternator will continuously charge the car battery, normally is around 14V.

#### Battery Status corresponding with Battery Voltage (Before Ignition)

Battery Voltage	Battery Status	Effects and Measures
<10.8V	Too Low	Hard to start vehicles; replace battery
10.8V-11.8V	Slightly Low	Hard to start vehicles;

#### Battery Status corresponding with Battery Voltage (After Ignition)

Battery Voltage	Battery Status	Effects and Measures
12.8V-13.2V	Too Low	Battery may not be charged; Check alternator or other electrical load
13.2-14.8V	Normal	Normal
>14.8V	High Voltage	May damage the battery; Check alternator stabilizer

Notice: If the current detected battery voltage is 11.9V, after a few hours trip, the battery voltage is still stay low, the cause could battery damage. (Under circumstance of normal alternator). Please replace the battery ASAP.

### 3.4 Review

#### Review waveform

From the startup screen, or press **ESC** button to enter Main Menu.

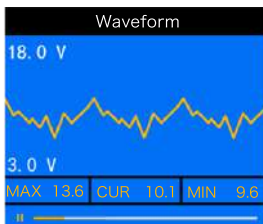
Press **MOVE** button to select the **[Review]** function in the Main Menu and press **OK** button, The screen will display the interface as shown below:



1) Press **MOVE** button to select Review waveform function and press **OK** button, The screen will display the interface as shown below:



2) Press **MOVE** button to select and press **OK** button, The screen will display the interface as shown below:

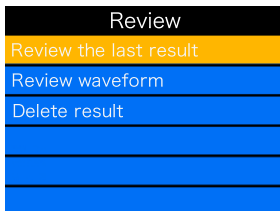


Long press the OK button to pause playback, short press the OK button to continue playing.

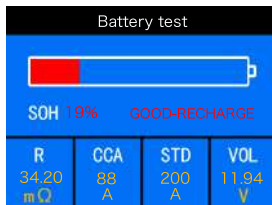
Review the last result

From the startup screen, or press **ESC** button to enter Main Menu.

Press **MOVE** button to select the **[Review]** function in the Main Menu and press **OK** button, The screen will display the interface as shown below:



1) Press **MOVE** button to select Review the last result function and press **OK** button, The screen will display the interface as shown below:



Press **UP/DOWN** button to select Review SOH or SOC .



### 3.5 Print

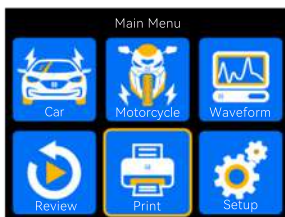
The Print Data function allows printing out testing data recorded by the testing tool for or customized test reports.

To print out retrieved data, you need the following tools:

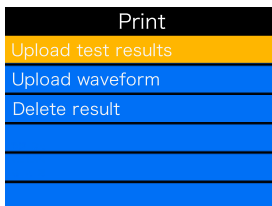
1. Tester tool
  2. A PC or laptop with USB ports
  3. A USB cable
- 1) Download the corresponding version of the app from our website: [www.vehlive.com](http://www.vehlive.com) .
  - 2) connect the tester tool to computer with the USB cable supplied.
  - 3) run **VEHLINK.exe** in your computer as below:



- 4) From the tester tool startup screen, or press **ESC** button to enter Main Menu. as below:



5) Press **MOVE** button to select the **[Print]** function in the Main Menu and press **OK** button, The screen will display the interface as shown below:



6) Press **MOVE** button to select Upload result or Upload waveform, and press **OK** button.

7) Press **MOVE** button to select Delete result, and press **OK** button to Delete all save of the tester tool test data.

#### 4 Update Mode

This function allows you to update the tool software .  
To update your tool, you need the following items.

1. tester tool
2. A PC or laptop with USB ports
3. USB cable

The update process:

- 1). Download the corresponding version of the app from our website: [www.vehlive.com](http://www.vehlive.com) .
- 2). Run VEHLINK.exe on the computer.
- 3). Press and hold the confirmation button on the device, plug it into the USB and connect it to the computer, and release it after the device's green light flashes.
- 4). Click the Check update button to upgrade.
- 5). When the verification fails during the upgrade and the upgrade cannot be performed, the red light will be on and the buzzer will sound for 3 seconds.
- 6). During the upgrade process, the yellow light of the device flashes.
- 7). The upgrade is successful: the green light stays on for 3 seconds, and the buzzer beeps 2 times quickly.
- 8). After the upgrade is successful, restart the tester.



## 5. Service Procedures

If you have any questions, please contact your local store, distributor or visit our website at [http:// www.vehlive.com](http://www.vehlive.com)

If it becomes necessary to return the tool for repair, contact your local distributor for more information.

