BMA60 Battery Analyzer

User Manual

Model: BMA60

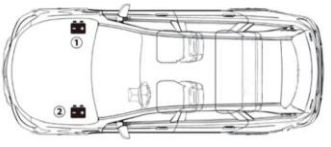
SAFETY PRECAUTIONS AND WARNINGS

DO NOT smoke, strike a match, or cause a spark near the vehicle during testing.
DO NOT contact with hot engine parts to prevent severe burns, especially when the engine is running.
DO NOT use the analyzer during driving.
DO NOT wear jewelry or loose clothing when working on an engine.
DO NOT place the analyzer near the running engine or exhaust pipe to avoid damage from high temperatures.
DO NOT connect the battery analyzer to the Jump-Start posts to ensure data accuracy and operation safety.
Exhaust gases are Poisonous. Operate the vehicle ONLY in a well-ventilated area and always perform vehicle testing in a safe environment.
To avoid serious injury, always be aware of rotating parts that move at high speed when an engine is running and keep a safe distance from these parts as well as other potentially moving objects.
The batteries, battery pole, terminals, and other accessories contain dangerous chemicals which may cause burns or explosions. Wash hands after handling.
To protect your eyes or skin from propelled objects as well as hot or caustic liquids, always wear ANSI approved goggles. Avoiding direct skin or eye contact with corrosive liquids.
Please keep the analyzer dry, clean, free from oil/water or grease.
Always disconnect the negative cable from the battery first and reconnect it last.
It cannot be used further, if the device is malfunctioning (e.g. damaged, deformed, leaking substances, incomplete display, etc.).
The measurement should be done as far as possible without touching the test clamp to prevent the risk of electric shock, although the battery voltage may be lower than the safe voltage.
Always have a FIRE EXTINGUISHER by your side for extra safety when working on a battery.
Follow all standard safety precautions when working on a battery.

1. General Information

1.1. Location of the battery of vehicle?

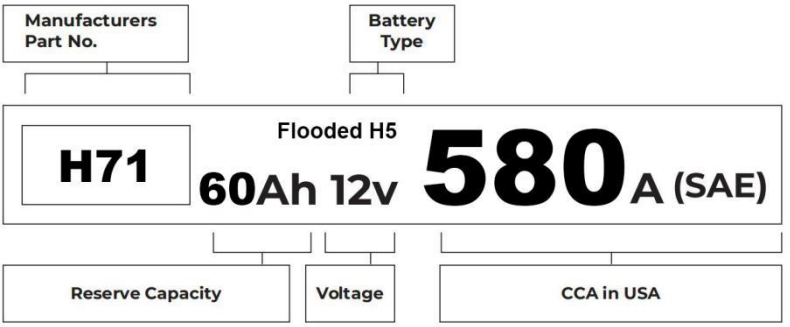
Most models hold the battery in the engine bay of a car, under the hood, in one of the front corners. See battery location ① and ②



For other location of battery, please refer to the vehicle's service manual.

1.2. Label, icon and type of Battery

The battery label as below picture show



Reserve Capacity: 60Ah

Reserve Capacity (RC) reflects the runtime in minutes at a steady discharge of 25A. DIN and IEC mark the battery in Ah at a typical discharge of 0.2C-rate (5h ate) for starter batteries. A 60Ah battery would discharge at 12A.

Battery Type: Flooded H5 (Regular Flooded Lead Acid Battery (Wet))

Please refer to this sheet to check the most commonly seen battery types for your reference.

Regular Regular Flooded Lead Acid Battery (Regular Flooded Battery)	The Regular Flooded Battery, which typically supplies a voltage of 12.6V at full charge, is usually made of 6 cells with a liquid electrolyte solution of sulfuric acid and water that needs to be topped off periodically.
Absorbent Glass Mat Battery (AGM)	AGM (Absorbed Glass Mats) battery is a lead acid battery, which is designed to deliver powerful bursts of starting amps and run for a long time. According to the cell structure, AGM battery is divided into two categories: **AGM FLAT PLATE and AGM SPIRAL**, which is ideal for vehicles with automatic start-stop applications and braking energy recovery.
Gel Cell Battery (Gel)	Gel battery is similar to regular flooded battery. But calcium replaces the antimony in the lead plates of Gel battery, mixing sulfuric acid with a silica-gelling agent converts liquid electrolyte into a semi-stiff paste to make the gel maintenance free.
Enhanced Flooded Battery (EFB)	Enhanced Flooded Battery (EFB) uses a liquid electrolyte solution, but it's different from the Regular Flooded Lead Acid Battery, it is sealed and maintenance-free.
Lithium Battery	Rechargeable battery with cobalt, manganese, nickel, and/or other metals as cathode and graphite anode. It may also be a Lithium-ion polymer battery: Similar to Li-ion with a solid polymer as an electrolyte; the addition of gelled material promotes conductivity.

Voltage: 12V

The vehicle batteries should measure at 12.6 volts (for 24V battery, it may be 25.2 volts), when fully charged. However, this measurement should be from 13.7 to 14.7 volts(for 24V battery, it may be from 26.5 to 28.2 volts) when the engine is running. It means that the battery's resting voltage is weak, if the battery tester reads less than this standard. In this case, it typically needs to charge or replace the battery.

CCA: 580 (SAE)

The Rated Battery CCA value. Cold Cranking Amps, as specified by SAE. The most common rating for cranking batteries at 0 ºF (–17.8 ºC).

1.3. Battery System Standard Description

Standard	Description
CCA	Cold Cranking Amps, as specified by SAE. The most common rating for cranking batteries at 0°F (- 18°C)
SAE	Society of Automotive Engineers
CA	Cranking Amps standard. The effective starting current value at 0°C (32°F)
MCA	Marine Cranking Amps standard. The effective starting current value at 0°C (32°F)
DIN	Deutsche Industrie-Norm. German Industry Stardard.
IEC	International Electrotechnical Commission
EN	Europa-Norm
BCI	Battery Council International standard
JIS	Japanese Industry Standard, shown on a battery as a combination of numbers and letters
GB	China National Standard

2. Product Descriptions

2.1. Intended Use

BMA60 Battery Analyzer is designed as rapid and hand-holding to apply for detection of all the 6V, 12V, 24V car battery, motorcycle battery, truck battery and other vehicle batteries.

It can rapidly and effectively analyze and read important vehicle data, such as voltage, internal resistance, cold cranking amps, waveform of cranking or charging, battery state of health and status of charging etc. It can help to find the battery problem quickly and accurately, thus can achieve quick vehicle repair.

2.2. Package List

- BMA60 Battery Analyzer
- User Manual

2.3. Compatibility

Please note that battery type and CCA values (Cold Cranking Amp) marked on the battery label before using.

BMA60 Battery Analyzer supports the following types:

- Regular Flooded
- AGM Flat Plate
- AGM Spiral
- GEL
- EFB
- Lithium

BMA60 Battery Analyzer supports the following measurement range:

Measurement Standard	Measurement Range
CCA	100-2000
IEC	100-1400

EN	100-2000
DIN	100-1400
CA	100-2000
BCI	100-2000
MCA	100-2000
SAE	100-2000
JIS	26A17-245H52

2.4. Technical Specification

Operating Temperature: -10 to 60□ (14 to 140 F°)

Storage Temperature: -20 to 70 □ (-4 to 158 F°)

Work Voltage Range: 5-35V DC. Power provided via vehicle battery

Cranking Test: support 12V and 24V

Charging Test: support 12V and 36V

2.5. Icons, Controls & Connections of Analyzer

NO.	Name	Descriptions
1	Display	Display: The colored screen shows menus, sub-menus, test results, specific functions, monitor status info, etc.
2	Clamps	Red Clamp is Positive clamp, Black Clamp is negative clamp.
3	□	Arrow keys, Move up for selection
4	□	Arrow keys, Move down for selection
5	□	Arrow keys, Move left for selection
6	□	Arrow keys, Move light for selection
7	ESC	When pressed, it brings you back to the previous menu.
8	F1	Waveform function Shortcut Button.Quick access to Waveform function.
9	OK	Enter, To confirm the current operation.
10		Green LED light on, the battery is good.
11		Yellow LED light on, the battery needs to charge and retest.

12		Red LED light on, the battery is bad, needs to replace.
13	USB Port	Factory internal use

3. Operation Introduction

3.1. Preparation & Connection

Clean the battery posts or side terminals, before connecting the tester.

Connecting the Analyzer

Connect the red clamp to the positive (+) terminal and the black clamp to the negative (–) terminal.

Before testing the battery, two clips are required to connect the terminals firmly.The best test location is the connection port of the battery. If the battery cannot be connected from the wiring port, you can try to test on the jumper port, but the measured data may be lower than the actual value. Three LED lights will flash if the Analyzer is not securely connected to the battery. The screen will flash as below picture during the detection if the Analyzer is not securely connected to the battery.

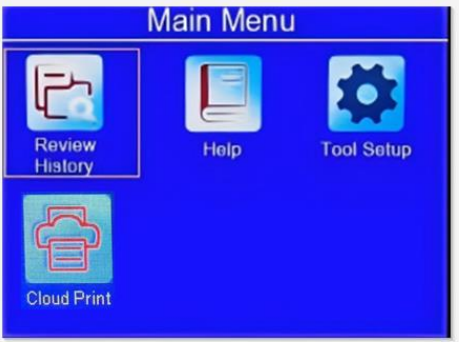
NOTE: Do not connect the Analyzer to a voltage source greater than 36V DC; otherwise it may damage the Analyzer.

Make sure the engine and all accessory loads are off in order to have accurate results.

The voltage will be slightly higher than the normal value, when the battery is fully charged. Please turn on the headlights for 2-3 minutes and wait for the voltage to return to the normal value before testing.

3.2. Main Menu

Once the BMA60 Battery Analyzer is connected to the power source, the color screen will light up, and display the starting screen, then display the **Main Menu**



Use the arrow keys, move for next page of **Main Menu**

NOTE: Not all function options of analyzer are applicable to all battery. Available options may vary by the voltage, measurement standard, chemical of battery, etc.

Please note that not all rating systems are available for each application.

3.3. Battery Test: Motorcycle

Select **Motorcycle** and press **OK** in **Main Menu** , it enters the **Motorcycle** function, the screen will display the **Select Type**

Select the type of battery according to the label of battery, press **OK.** Please select the type of Regular Blooded if it can't confirm the type of the battery. But the testing result would be not accurate.

Set Battery Rating: set to and select the rating value according the label of battery. Select 3Ah (for example), press **OK**, the Analyzer works. Note: Hold down Up or Down key to increase the scrolling speed.

The testing result of **GOOD BATTERY or REPLACE** displays as above. For more description of testing result, please check the below sheet.

Battery Test Result	**Description**
Good Battery	The battery is without any problem, please be relaxed to use
Good-Recharge	Good battery but low current, recharge before using. Note: If the battery is not fully charged before retesting, it may result in error readings. If display again after charging, test again after charging, please replace the battery.

Replace	Battery is near to or already reached the end of the using life, replace battery
Bad cell	Battery interior damaged, bad cell or short circuit, replace battery
Charge-Retest	Unstable battery should be recharged and retest to avoid error. If same test result appears after recharge and retest, the battery is damaged, replace the battery

Remarks of the result:

SOH(State of Health): Reflects battery performance; measured in %.

CCA: Indicates the test result of CCA.

SOC(State of Charge): Indicates charge level of a battery; normally measured in percent. it describes the difference between a fully charged battery and the same battery in use.

VOL: Voltage of the battery.

STD: The battery rating value which set before testing.

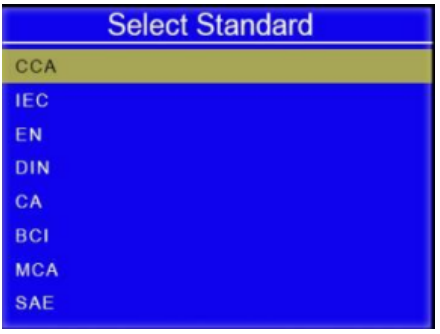
R(Internal Resistance): Electrical resistance of a battery pack in milliohms. It is the opposition to the current flow presented by the cells and the battery itself, generating heat. A good battery has low resistance; corrosion raises it

The result of LED Light indication as below sheet:

Test Battery Result	LED Light on
Good	
Good-Recharge	
Bad cell or Replace	
Charge-Retest	

3.4. Battery Test: Car

Select **Car,** press **OK** in **Main Menu**, it enters the **Car** function, the screen will display the **Select Type** :

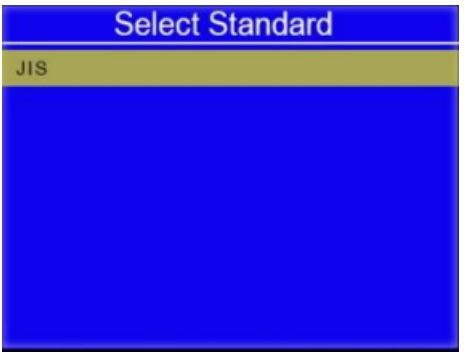


Select the type of battery according to the label of battery, press **OK**, it displays the **Select Standard**. Use the arrow keys, move for next page of **Select Standard**

Please select the type of Regular Blooded if it can't confirm the type of the battery. But the testing result would be not accurate.

Select the measurement standard of battery according to the label of battery(for example **CCA**), press **OK**, it displays the **Set Battery Rating**

Please note that the Set Battery range is 100-2000CCA.



Set Battery Rating: set to and select the rating value according the label of battery. The setting range is 100A-2000A. Select 580A(for example), press **OK**, the Analyzer works . Note: Hold down Up or Down key to increase the scrolling speed.

The testing result of **GOOD BATTERY** AND **REPLACE** displays as the picture show. For more description of testing result, please check the below sheet.

Battery Test Result	**Description**
Good Battery	The battery is without any problem, please be relaxed to use
Good-Recharge	Good battery but low current, recharge before using. Note: If the battery is not fully charged before retesting, it may result in error readings. If display again after charging, test again after charging, please replace the battery.
Replace	Battery is near to or already reached the end of the using life, replace battery
Bad cell	Battery interior damaged, bad cell or short circuit, replace battery
Charge-Retest	Unstable battery should be recharged and retest to avoid error. If same test result appears after recharge and retest, the battery is damaged, replace the battery

Remarks of the result:

SOH(State of Health): Reflects battery performance; measured in %.

CCA: Indicates the test result of CCA.

SOC(State of Charge): Indicates charge level of a battery; normally measured in percent. it describes the difference between a fully charged battery and the same battery in use.

VOL: Voltage of the battery.

STD: The battery rating value which set before testing.

R(Internal Resistance): Electrical resistance of a battery pack in milliohms. It is the opposition to the current flow presented by the cells and the battery itself, generating heat. A good battery has low resistance; corrosion raises it.

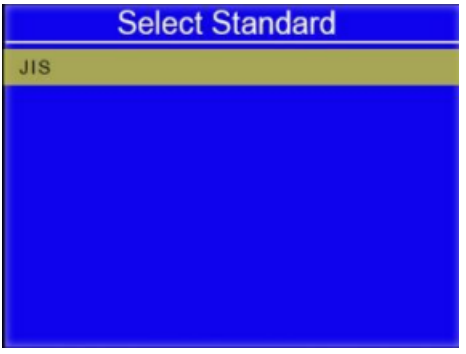
The result of LED Light indication as below sheet:

Test Battery Result	LED Light on
Good	
Good-Recharge	
Bad cell or Replace	
Charge-Retest	

3.5. Battery Test: Truck

Select **Truck,** press **OK** in **Main Menu,** it enters the **Truck** function, the screen will display the **Select Type**

Select the type of battery according to the label of battery, press **OK**, it displays the **Select Standard.** Use the arrow keys, move for next page of **Select Standard**



Please select the type of Regular Blooded if it can't confirm the type of the battery. But the testing result would be not accurate.

Select the measurement standard of battery according to the label of battery(for example **CCA**), press **OK**, it displays the **Set Battery Rating** .

Please note that the Set Battery range is 100-2000CCA.

Set Battery Rating: set to and select the rating value according the label of battery. The setting range is 100A-2000A. Select 650A(for example), press **OK**, the Analyzer works. Hold down Up or Down key to increase the scrolling speed.

The testing result of **GOOD BATTERY OR REPLACE** displays as below picture show

For more description of testing result, please check the below sheet.

Battery Test Result	Description
Good Battery	The battery is without any problem, please be relaxed to use
Good-Recharge	Good battery but low current, recharge before using. Note: If the battery is not fully charged before retesting, it may result in error readings. If display again after charging, test again after charging, please replace the battery.
Replace	Battery is near to or already reached the end of the using life, replace battery
Bad cell	Battery interior damaged, bad cell or short circuit, replace battery
Charge-Retest	Unstable battery should be recharged and retest to avoid error. If same test result appears after recharge and retest, the battery is damaged, replace the battery

Remarks of the result:

SOH(State of Health): Reflects battery performance; measured in %.

CCA: Indicates the test result of CCA.

SOC(State of Charge): Indicates charge level of a battery; normally measured in percent. it describes the difference between a fully charged battery and the same battery in use.

VOL: Voltage of the battery.

STD: The battery rating value which set before testing.

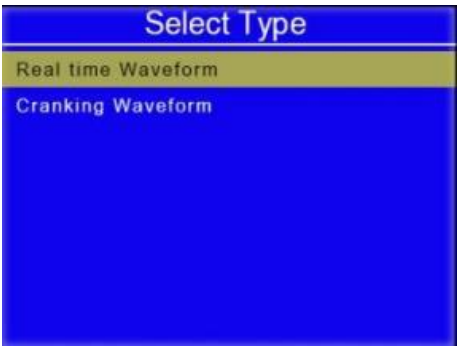
R(Internal Resistance): Electrical resistance of a battery pack in milliohms. It is the opposition to the current flow presented by the cells and the battery itself, generating heat. A good battery has low resistance; corrosion raises it.

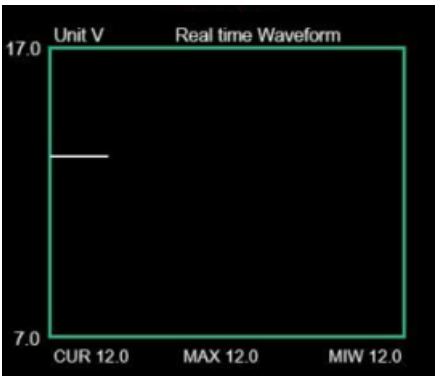
The result of LED Light indication as below sheet:

Test Battery Result	LED Light on
Good	
Good-Recharge	
Bad cell or Replace	
Charge-Retest	

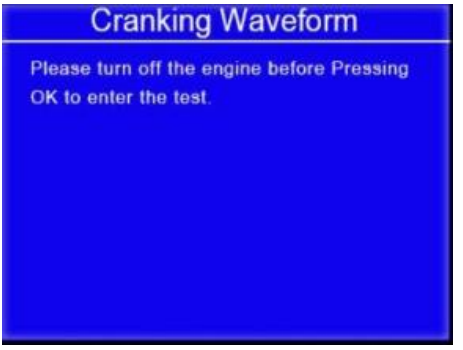
3.6. Waveform

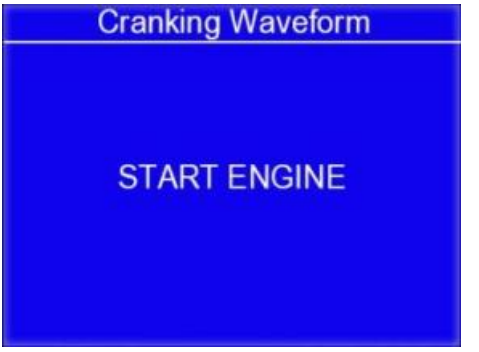
Select **Waveform** in the **Main Menu** and press **OK**. Select **Real time Waveform** in the **Waveform** menu, press **OK**, it displays as below

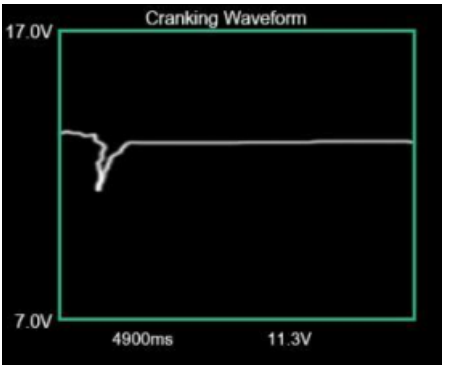




Select **Cranking Waveform** in the **Waveform** menu, press **OK**, it displays. Following up the notes to operate in the screen, press **OK** to enter next step. Following up the notes to operate in the screen, The waveform result of test displays.

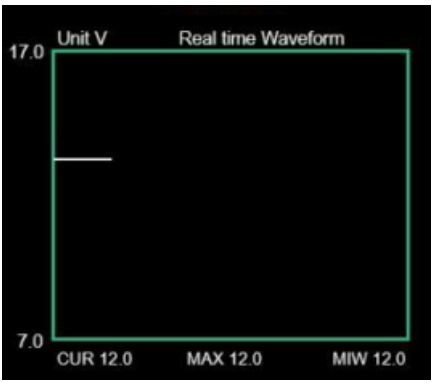






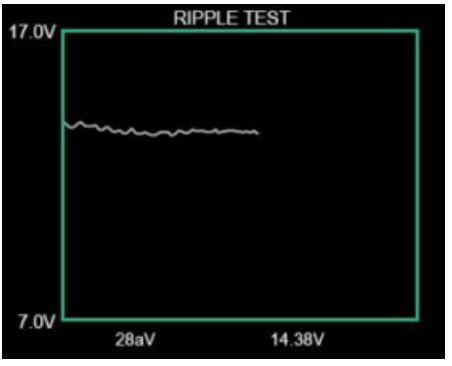
Using the quick key **F1** to detect the **Real Time Waveform**.

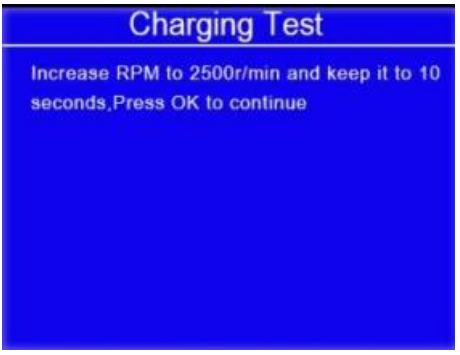
Press the **F1** in the **Main Menu**, it displays as below



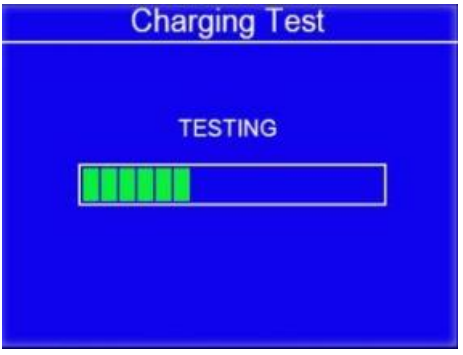
3.7. Charging Test

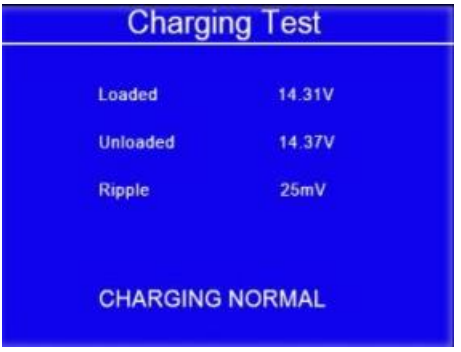
Select **Charging Test** in the **Main Menu**, press **OK**. The waveform result of test displays as bleow. Following up the notes to operate in the screen, press **OK** to enter next step.





The Analyzer will run automatically. The result of **Charging Test** displays as below.





Remarks of Charging Test result:

Charging Test Result	**Description**
CHARGING NORMAL	Generator output is normal and there is no problem.
CHARGING HIGH	Generator output is high.

CHARGING LOW	Generator output is low.
NO OUTPUT	Generator connection cable and belt check requirement.

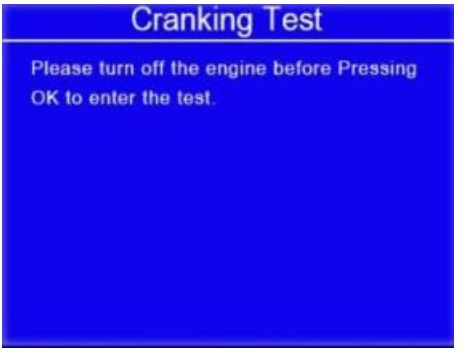
The result of LED Light indication as below sheet:

Charging Test Result	**LED Light on**
CHARGING NORMAL	
CHARGING HIGH	
CHARGING LOW	
NO OUTPUT	

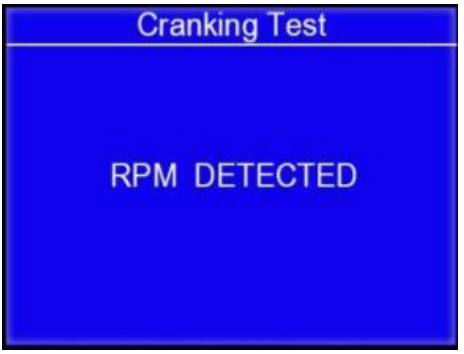
PLEASE NOTE: The performance of the starting and charging system depends on the health of the battery. It is necessary to check the starting and charging system after confirming that the battery is in good performance and fully charged.

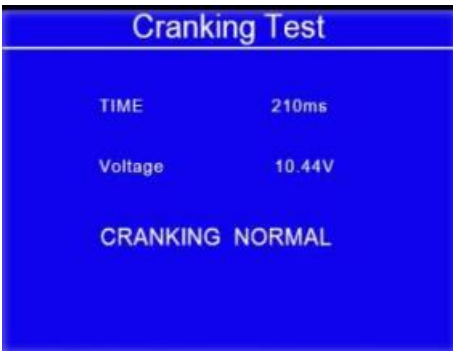
3.8. Start the test

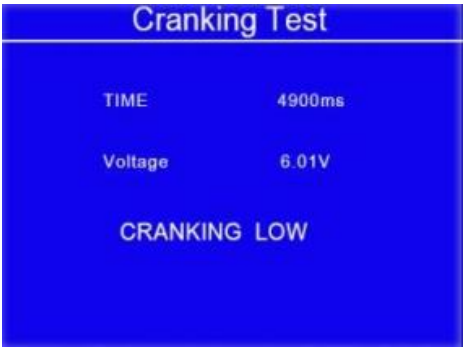
Select **Start a test** in the **Main Menu**, press **OK** . Following up the notes to operate in the screen as below picture, press OK to enter next step. Following up the notes to operate in the screen as below.



Press **OK** to enter next step, the result of **Cranking Test** as below







Remarks of **Start a test** result:

Test Result	Description
CRANKING NORMAL	Generator output is normal and there is no problem.
CRANKING LOW	Poor performance Needs quick replacement.

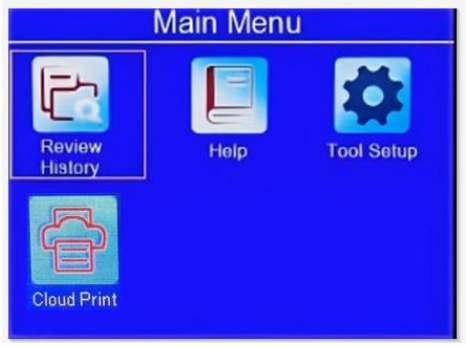
The result of LED Light indication as below sheet:

Cranking Test Result	LED Light on
CRANKING NORMAL	
CRANKING LOW	

PLEASE NOTE: The performance of the starting and charging system depends on the health of the battery. It is necessary to check the starting and charging system after confirming that the battery is in good performance and fully charged.

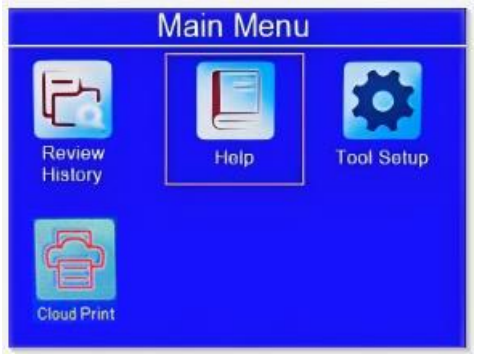
3.9. Review History

The **Review History** function refers to review the recorded data. Select **Review History** in the **Main Menu** and press **OK** . The result displays as below



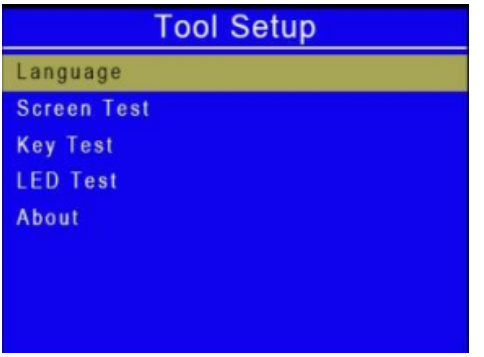
3.10. Help

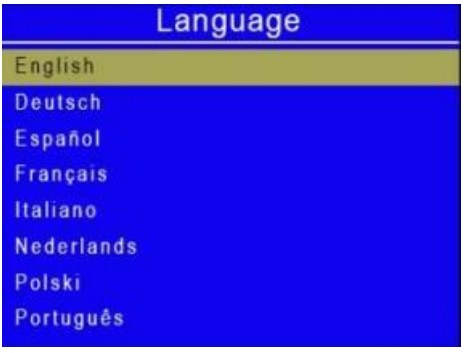
This **Help** function refer to view the Measurement Standard introduction.



3.11. Tool Setup

Select **Tool Setup** in the **Main Menu** and press **OK,** as below





Select **Language** in the **Tool Setup** menu and press **OK** . Choose the language and press **OK can choose the** languages you need.
Select one of **Screen Test/Kay Test/LED Test** in the **Tool Setup** menu and press **OK**. The scanner will test it.
Select About in the Tool Setup menu and press OK, it will display as below

3.12. Cloud Print

Select **Cloud Print** in the **Main Menu** and press **OK,** as below

If you want to see the Battery Test report on smartphone, please test the battery first, then Select **Cloud Print** and press ok, then you can see the QR code, use your smartphone to scan the QR code, then can see the Battery Test report as below:

Battery Test

2025-6-23 12 : 18

Test Report

REPLACE

SOC	100%
VOL	13.28V

SOH	28%
CCA	255A
R	11.5mΩ
STD	60Ah
Type	Regular Flooded
Standard	Ah
Language	English