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One-Year Limited Warranty

Subject to the conditions of this limited warranty, Shenzhen Foxwell Technology Co., Ltd (“FOXWELL”) warrants its customer that this product is free of defects in material and workmanship at the time of its original purchase for a subsequent period of one (1) year.

In the event this product fails to operate under normal use, during the warranty period, due to defects in materials and workmanship, FOXWELL will, at its sole option, either repair or replace the product in accordance with the terms and conditions stipulated herein.

Terms and Conditions

1 If FOXWELL repairs or replaces the product, the repaired or replaced product shall be warranted for the remaining time of the original warranty period. No charge will be made to the customer for replacement parts or labor charges incurred by FOXWELL in repairing or replacing the defective parts.

2 The customer shall have no coverage or benefits under this limited warranty if any of the following conditions are applicable:

a) The product has been subjected to abnormal use, abnormal conditions, improper storage, exposure to moisture or dampness, unauthorized modifications, unauthorized repair, misuse, neglect, abuse, accident, alteration, improper installation, or other acts which are not the fault of FOXWELL, including damage caused by shipping.

b) The Product has been damaged from external causes such as collision with an object, or from fire, flooding, sand, dirt, windstorm, lightning, earthquake or damage from exposure to weather conditions, an Act of God, or battery leakage, theft, blown fuse, improper use of any electrical source, or the product was used in combination or connection with other product, attachments, supplies or consumables not manufactured or distributed by FOXWELL.

3 The customer shall bear the cost of shipping the product to FOXWELL. And FOXWELL shall bear the cost of shipping the product back to the customer after the completion of service under this limited warranty.

4 FOXWELL does not warrant uninterrupted or error-free operation of the product. If a problem develops during the limited warranty period, the consumer shall take the following step-by-step procedure:

a) The customer shall return the product to the place of purchase for repair or replacement processing, contact your local FOXWELL distributor or visit our website www.foxwelltech.com to get further information.

b) The customer shall include a return address, daytime phone number and/or fax number, complete description of the problem and original invoice specifying date of purchase and serial number.

c) The customer will be billed for any parts or labor charges not covered by this limited warranty.

d) FOXWELL will repair the Product under the limited warranty within 30 days after receipt of the product. If FOXWELL cannot perform repairs covered under this limited warranty within 30 days, or after a reasonable number of attempts to repair the same defect, FOXWELL at its option, will provide a replacement product or refund the purchase price of the product less a reasonable amount for usage.

e) If the product is returned during the limited warranty period, but the problem with the product is not covered under the terms and conditions of this limited warranty, the customer will be notified and given an estimate of the charges the customer must pay to have the product repaired, with all shipping charges billed to the customer. If the estimate is refused, the product will be returned freight collect. If the product is returned after the expiration of the limited warranty period, FOXWELL' normal service policies shall apply and the customer will be responsible for all shipping charges.

5 Any implied warranty of merchantability, or fitness for a particular purpose or use, shall be limited to the duration of the foregoing limited written warranty. otherwise, the foregoing limited warranty is the consumer's sole and exclusive remedy and is in lieu of all other warranties, express or implied. foxwell shall not be liable for special, incidental, punitive or consequential damages, including but not limited to loss of anticipated benefits or profits, loss of savings or revenue, loss of data, punitive damages, loss of use of the product or any associated equipment, cost of capital, cost of any substitute equipment or facilities, downtime, the claims of any third parties, including customers, and injury to property, resulting from the purchase or use of the product or arising from breach of the warranty, breach of contract, negligence, strict tort, or any other legal or equitable theory, even if foxwell knew of the likelihood of such damages. foxwell shall not be liable for delay in rendering service under the limited warranty, or loss of use during the period that the product is being repaired.

6 Some states do not allow limitation of how long an implied warranty lasts, so the one-year warranty limitation may not apply to you (the Consumer). Some states do not allow the exclusion

or limitation of incidental and consequential damages, so certain of the above limitations or exclusions may not apply to you (the Consumer). This limited warranty gives the Consumer specific legal rights and the Consumer may also have other rights which vary from state to state.

Safety Information

For your own safety and the safety of others, and to prevent damage to the equipment and vehicles, read this manual thoroughly before operating your tester. The safety messages presented below and throughout this user's manual are reminders to the operator to exercise extreme care when using this device. Always follow all BCI (Battery Council International) safety recommendations. Read, understand and follow all safety messages and instructions in this manual.

Safety Message Conventions Used

We provide safety messages to help prevent personal injury and equipment damage. Below are signal words we used to indicate the hazard level in a condition.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury to the operator or to bystanders.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury to the operator or to bystanders.

CAUTION

Indicates a potentially hazardous situation which, if not avoided, may result in moderate or minor injury to the operator or to bystanders.

Important Safety Instructions

And always use your tester as described in the user's manual, and follow all safety messages.

WARNING

Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals know to the state of California to cause cancer and birth defects or other reproductive harm. Wash hands after handling.

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1 Using This Manual

We provide tool usage instructions in this manual. Below is the conventions we used in the manual.

1.1 Bold Text

Bold text is used to highlight selectable items such as buttons and menu options.

Example:

Press the **ENTER** button to select.

1.2 Symbols and Icons

1.2.1 Solid Spot

Operation tips and lists that apply to specific tool are introduced by a solid spot ●.

Example:

Menu options include:

- BATTERY
- CRANKING
- CHARGING
- SYSTEM
- VIEW
- SETUP

1.2.2 Arrow Icon

 An arrow icon indicates a procedure.

Example:



To change menu language:

1. Scroll with the arrow keys to highlight **Language** on the menu.
2. Press the **ENTER** button to select.

1.2.3 Note and Important Message

Note

A NOTE provides helpful information such as additional explanations, tips, and comments.

Example:

NOTE

Test results do not necessarily indicate a faulty component or system.

Important

IMPORTANT indicates a situation which, if not avoided, may result in damage to the test equipment or vehicle.

Example:

IMPORTANT

Do not soak product as water might find its way into the tester.

2 Introductions

The latest BT301 Battery Tester from Foxwell is dedicatedly developed to test 12V regular flooded, AGM flat plate, AGM spiral and gel batteries and 6V & 12V starting and charging system. It provides a quick, easy and affordable solution for technicians to check battery health and detect faults of starting and charging system. Main functions include battery test, cranking test, and charging test.

2.1 Tester Descriptions

This section illustrates external features, ports and connectors of the tester.



A **Test Cable** - Connects the tester to battery for testing

B LCD Display - shows menus, test results and operation tips.

C UP and Down Buttons - selects an option or scroll to menu options.

D Left and Right Buttons - moves the cursor left or right to select characters when inputting the plate number of the car.

E Menu Button - access the Main Menu options of the tester.

F ENTER Button - executes a selected option and generally goes to the next screen.

G VOLT - Click the VOLT button at the top of the page and the voltage value will be displayed.

H BACK Button - exits a screen and generally returns to previous screen.

IMPORTANT

Do not use solvents such as alcohol to clean keypad or display. Use a mild nonabrasive detergent and a soft cotton cloth.

2.2 Accessory Descriptions

This section lists the accessories that go with the tester. If you find any of the following items missing from your package, contact your local dealer for assistance.

1 **User's Guide** - provides operation instructions for the usage of the tester.

2 **Quick Start Guide** - provides quick start operation guide.

2.3 Specifications

Display: 2.8" TFT color display

Working Temperature: 0 to 60°C (32 to 140°F)

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

Power Supply: 8-18V vehicle power

Dimensions (L*W*H): 145*94*32mm

Gross Weight: 0.6 KG

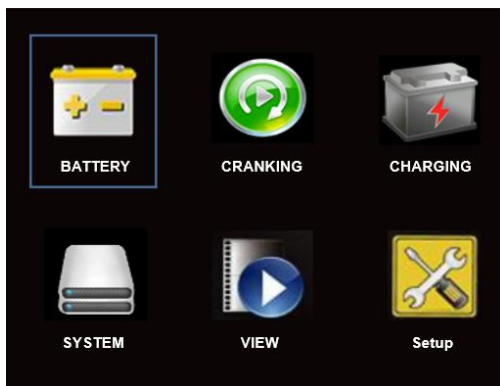
3 Operations

This section describes how to use the tester to perform tests on car batteries and charging systems. The menu-driven display will guide you step by step through the test process.

3.1 Connecting The Tester

The tester powers on automatically when it is correctly connected to the battery. The preferred test position is at the battery terminals. If the battery is not accessible, you may test at the jumper post; however, the power measurement may be lower than the actual value.

- ▶ To connect the tester:
1. Clean the battery posts or side terminals.
 2. Connect the red clamp to the positive (+) terminal and the black clamp to the negative (-) terminal.
 3. Rock the clamps back and forth to make sure the clamps are firmly connected. In case the connection is poor, a “CHECK CONNECTION” message displays.
 4. When the tester is correctly connected, it boots up automatically and show the voltage of the battery.
 5. Press the **MENU** button to go to the Main Menu.



NOTE

Do not connect the tester to a voltage source greater than 30VDC; otherwise you may damage the tester.

NOTE

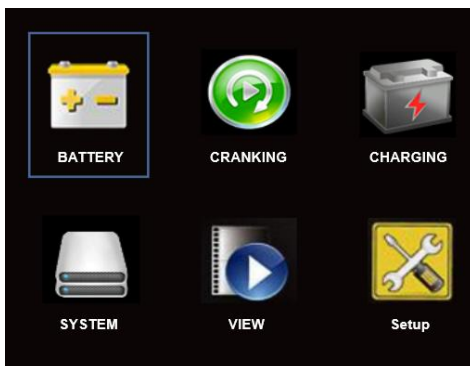
If you are testing inside a vehicle, make sure all accessory loads are cut off, the key is not in the ON position and the doors are closed.

3.2 Battery Test

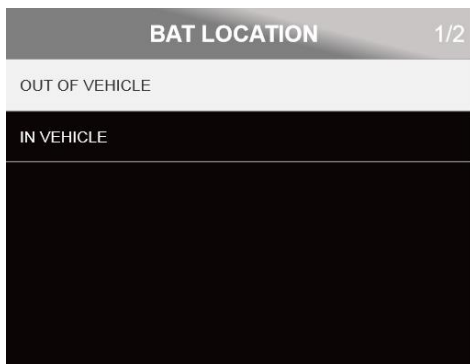
Battery Test menu lets you analyze the battery healthy status to calculate the actual cold cranking capability of the battery and the aging status. It lets you check 6V,12V charging system to make sure the output voltage of the generator is normal, the rectifier diode works correctly and the charging current is normal.

▶ To start a battery test:

1. Scroll with the **UP** or **DOWN** button to highlight **Battery Test** from Main Menu and press the **ENTER** key.



2. Scroll with the **UP** or **DOWN** button to highlight **IN VEHICLE** or **OUT OF VEHICLE** from BATTERY LOCATION menu and press **ENTER** to select the battery location.



3. Scroll with the **UP** or **DOWN** button to select the battery type from **BATTERY TYPE** menu and press **ENTER** to confirm.

BATTERY TYPE	1/4
REGULAR	
EFB	
AGM	
GEL	

4. Scroll with the **UP** or **DOWN** button to select the battery standard from **BATTERY STANDARD** menu and press **ENTER** to confirm. Not all rating systems are available for each application.

BATTERY STANDARD	1/8
CCA	
JIS	
SAE	
DIN	
EN	
MCA	

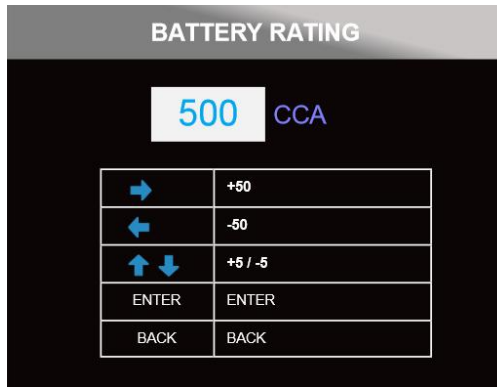
You may find the battery type and battery rating label on every battery.

Global Rating Systems

No.	Standard	Description	BT301 Testing Range
1	CCA	Cold Cranking Amps, as specified by SAE. The most common rating for cranking batteries at 0°F (-18°C)	100-2000
2	CA	Cranking Amps standard. The effective starting current value at 0°C (32°F).	100-2000
3	MCA	Marine Cranking Amps standard. The effective starting current value at 0°C (32°F).	100-2000
4	JIS	Japanese Industry Standard, shown on a battery as a combination of numbers and letters	26A17--245H52
5	DIN	Deutsche Industrie-Norm	100-1800
6	IEC	International Electrotechnical Commission	100-1800

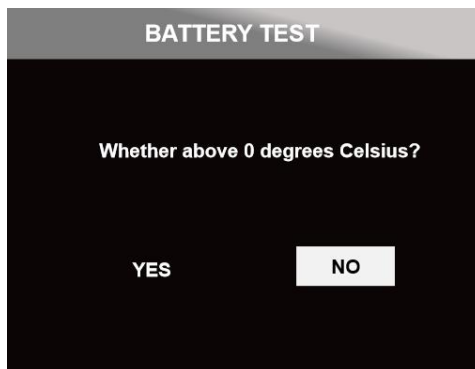
7	EN	Europa-Norm	100-2000
8	SAE	Society of Automotive Engineers	100-2000

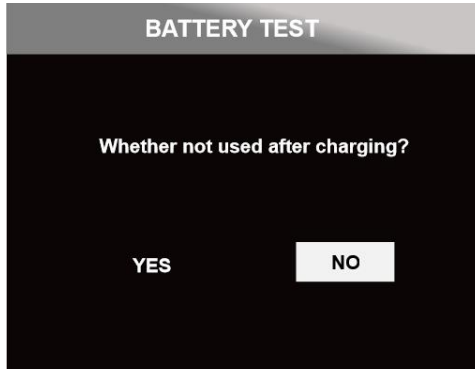
5. Use button to change measure range till you enter the correct range of your battery. Press **ENTER** to start the test. (**UP** or **DOWN** button modification value is ± 5 , **Left** or **right** button modification value is ± 50)



If your battery belongs to CCA system, just select the right CCA number and press **ENTER** to start the test.

6. If the device detects uncertainty about the temperature and whether it is charging or not, please manually select **YES** or **NO**.





7. View test results on the screen. Depending on battery status, one of the following test results may display.

BATTERY RESULT	
REPLACE BATTERY	
VOLTS	14.61V
MEASURED	21CCA
RATING	500CCA
SOH	5 %
SOC	100 %

No.	Test Results	Interpretation
1	GOOD BATTERY	The battery is in good condition.
2	GOOD-RECHARGE	The battery is in good condition but low current. Fully charge the battery and return it to service.
3	CHARGE & RETEST	Fully charge the battery and retest. Failure to fully charge the battery before testing may result in inaccurate results. If you still get CHARGE & RETEST message after you fully charge the battery, replace it.
4	REPLACE BATTERY	The battery is almost dead or the connection between the battery and battery cable is poor. Replace the battery and retest; or disconnect the battery cables and retest the battery using the out-of-vehicle test before replacing it.
5	BAD CELL-REPLACE	The battery may be damaged such as broken cell or short circuit. Replace the battery and retest.

8. Press the **BACK** button to return to Main Menu.

NOTE

The tester keeps the results of last test only. When you start a new test, the last results are overwritten.

3.3 Cranking Test

NOTE

Before starting the test, inspect the alternator drive belt. A belt that is glazed or worn, or lacks the proper tension, will prevent the engine from achieving the rpm levels needed for the test.

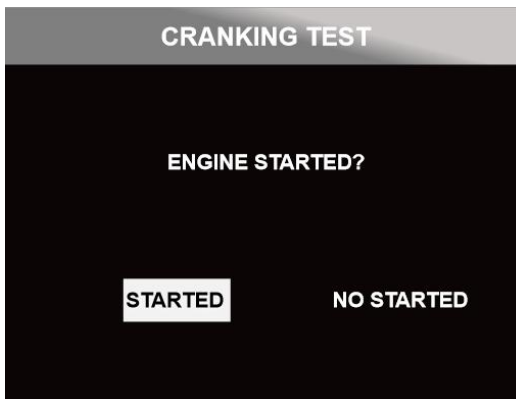


To start cranking test:

1. Press the **ENTER** button for cranking test.
2. Follow the instructions on the page to start the engine within 30 seconds



3. If the device isn't sure the engine has started after 30 seconds of testing, manually select "STARTED" or "NO STARTED".



4. The tester displays the decision on the starter system, cranking voltage, and cranking time in milliseconds.

CRANKING RESULT	
CRANKING NORMAL	
VOLTS	10.47V
TIME	4.00S


No.	Test Results	Interpretation
1	CRANKING NORMAL	The starter voltage is normal and the battery is fully charged.
2	LOW VOLTAGE	The starter voltage is low and the battery is fully charged.
3	CHARGE BATTERY	The starter voltage is low and the battery is discharged. Fully charge the battery and repeat the starter system test.
4	REPLACE BATTERY	Battery must be replaced before the starting system can be tested.
5	NO START	No vehicle start detected.
6	CRANKING SKIPPED	A start was not detected.

5. Press **BACK** button to return to the main menu.

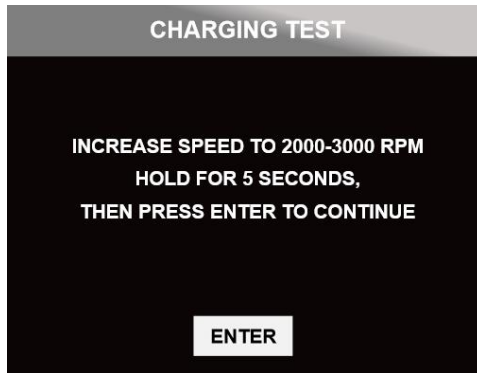
NOTE

For an in-vehicle System test, the display alternates between the test results and the message. Press **ENTER** for charging test.

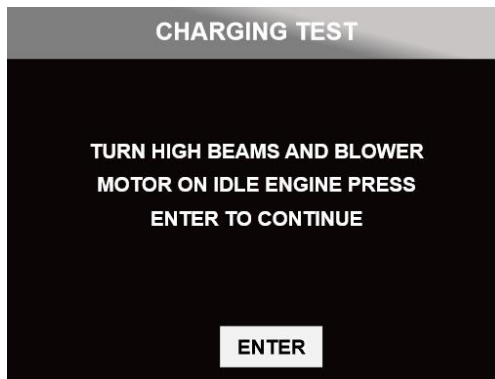
3.4 Charging Test

 To start cranking test:

1. Follow the on-screen prompts to Rev the engine.



2. Turn on high beams headlights and the blower fan.



3. Rev engine with loads on.

4. Idle engine and turn off loads.

5. The Charging System decision is displayed at the end of the procedure.

CHARGING RESULT	
NO PROBLEMS	
NO LOAD	14.23V
LOADED	13.28V
RIPPLE PEAK	0.32mV

No.	Test Results	Interpretation
1	NO PROBLEMS	System is showing normal output from the alternator.
2	NO OUTPUT	No alternator output detected. Check all connections to and from the alternator, especially the connection to the battery. If the connection is loose or heavily corroded, clean or replace the cable and retest. If the belts and connections are in good working condition, replace the alternator. (Older vehicles use external voltage regulators, which may require only replacement of the voltage regulator.)
3	LOW OUTPUT	Alternator not providing sufficient to power the system's electrical loads and charge the battery. Check the belts to ensure the alternator is rotating with the engine running. Replace broken or slipping belts and retest. Check the connections from the alternator to the battery. If the connection is loose or heavily corroded, clean or replace the cable and retest.
4	HIGH OUTPUT	Alternator voltage output exceeds the normal limits. Make sure there are no loose connections and the ground connection is normal. If there are no connection problems, replace the regulator. Most alternators have a built-in regulator that requires replacing the alternator. In older vehicles that use external voltage regulators, you may need to replace only the voltage regulator.
5	EXCESSIVE RIPPLE	Excessive AC ripple detected. One or more diodes in the alternator are not functioning or there is stator damage.
6	CHARGE BATTERY	The starter voltage is low and the battery is discharged. Fully charge the battery and repeat the starter system test.
7	REPLACE BATTERY	Battery must be replaced before the starting system can be tested.

4 System Test

The battery in vehicle can be continuously tested the Battery Test, the Cranking Test and the Charging Test in the "System Test". After the Battery Test, you can press **ENTER** to perform the Cranking Test, and after the Cranking Test, you can press **ENTER** to perform the Charging Test.

BATTERY RESULT	
REPLACE BATTERY	
VOLTS	14.61V
MEASURED	21CCA
RATING	500CCA
SOH	5 %
SOC	100 %

▶ To View Three Reports.:

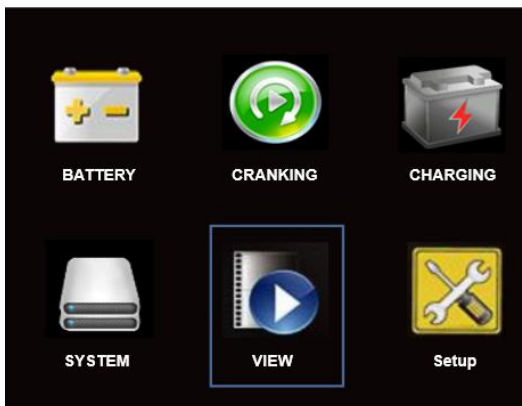
1. After the end of the Charging Test, you can view the three reports by pressing "Left" or "Right".

5 Viewing Test Results

View menu lets you view test results.

▶ To view the test results:

1. Scroll with the **UP** or **DOWN** button to highlight **View** from Main Menu and press the **ENTER** key.



2. Review the test results on the screen. Use the **LEFT** or **RIGHT** button to scroll back and forth through Battery Result, Cranking Result and Charging Result to view.

BATTERY RESULT	
REPLACE BATTERY	
VOLTS	14.61V
MEASURED	21CCA
RATING	500CCA
SOH	5 %
SOC	100 %

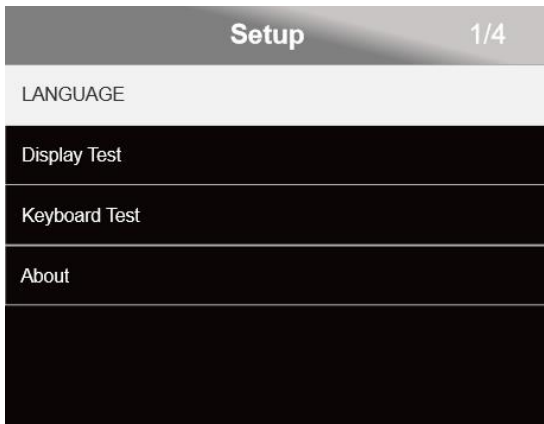
6 Setup

Scroll with the **UP** or **DOWN** button to highlight View from Main Menu and press the **ENTER** key.



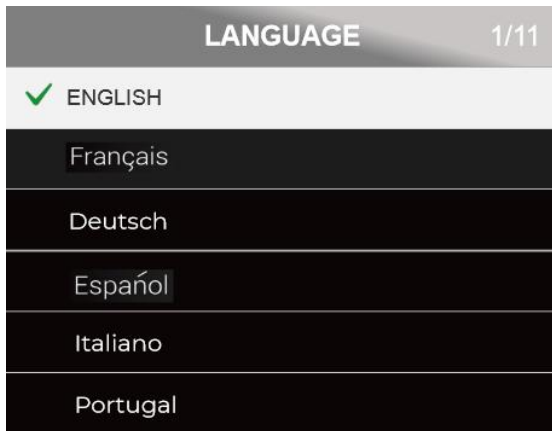
This section illustrates how to program the Battery tester to meet your specific needs. When Setup application is selected, a menu with available service options displays. Menu options typically include:

- LANGUAGE
- Display Test
- Keyboard Test
- About




6.1 LANGUAGE

Press the **UP/DOWN** key select a language and press the **ENTER** key to confirm. Press the **BACK** key to exit and return.

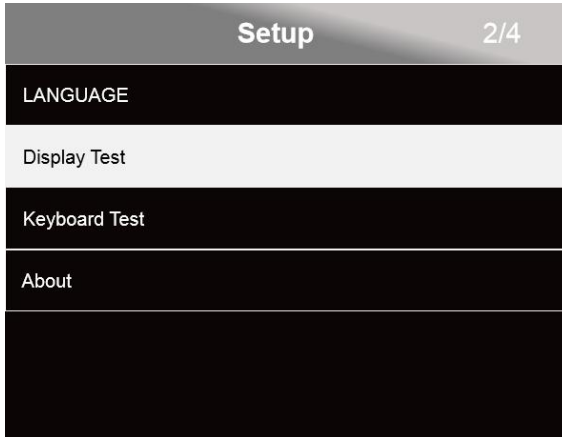


6.2 Display Test

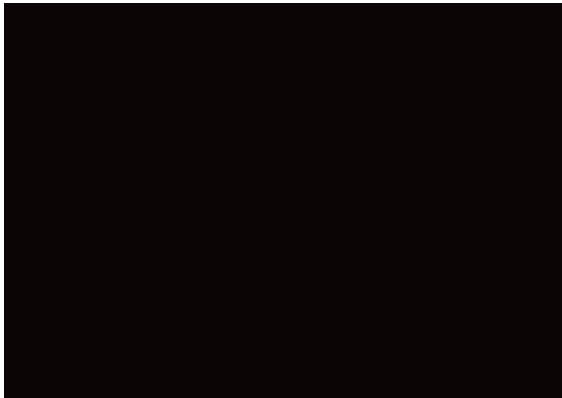
Selecting Display Test option opens a screen that allows you to check the functionality of the display.

 To test the display:

1. Use the **UP/DOWN** key to highlight **Display Test** from Setup menu and press the **ENTER** key to start test.



2. Check if there are any missing spots in the LCD screen.



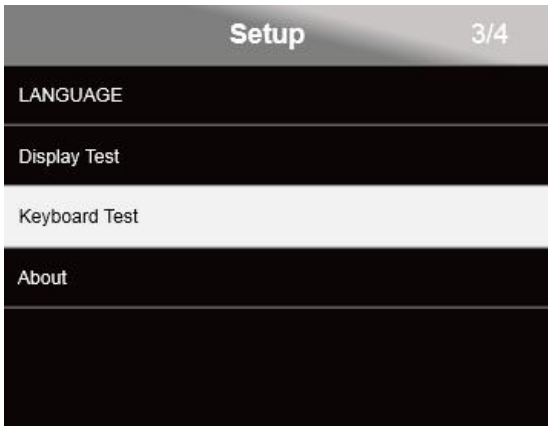
3. To quit the test, press the BACK key.

6.3 Keyboard Test

Selecting Display Test option opens a screen that allows you to check the functionality of the display.

▶ To test the display:

1. Use the **UP/DOWN** key to highlight **Display Test** from Setup menu and press the **ENTER** key.



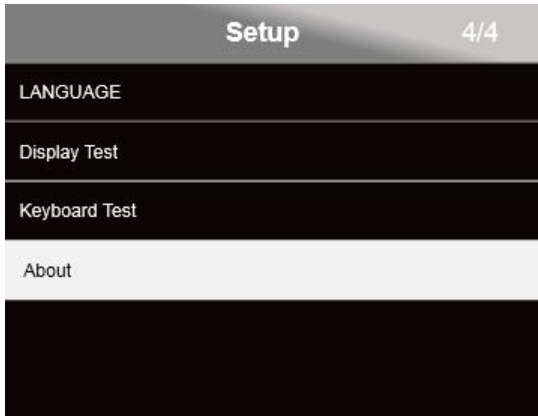
2. Press any key to start test. Key name or scroll direction should show on display when you press a key.



6.4 About

Version Info menu lets you view software information of the tester.

- ▶ To view information of your Battery Tester:
 1. Use the LEFT/RIGHT key to highlight Setup from home menu and Highlight About press Enter key.



2. A screen with detailed information of the Battery Tester displays.



3. Press the **BACK** key to exit and return to the Setup menu.

7 Read Voltage

Read Voltage menu lets you Read Voltage results.

▶ To Read Voltage results:

1. Click the **VOLT** button at the top of the page and the voltage value will be displayed.



12.38 V