

# BT100W

12V Battery Tester 100-2000 CCA

USER MANUAL



**TOPDON**



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## MANUAL SUPPORT IN OTHER LANGUAGES

For multilingual manual in PDF form, scan the QR code below or visit <https://www.topdon.com/products/bt100w>



## SAFETY IS ALWAYS THE FIRST PRIORITY!

### READ ALL INSTRUCTIONS BEFORE USING

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For your safety, the safety of others, and to avoid any damage to the product and your vehicle, carefully read and make sure you fully understand this manual's safety instructions in its entirety. You must read the vehicle's service manual, the battery manufacturer's specific safeguards, and observe the stated precautions or instructions before and during any test or service procedure.



**ONLY OPERATE TESTS IN A WELL-VENTILATED AREA** since the vehicle produces carbon monoxide when the engine is running.



**ALWAYS WEAR APPROVED EYE PROTECTION** to prevent damage from sharp objects and/or caustic liquids.



**ALWAYS BE AWARE OF MOVING PARTS** (such as coolant fans, pulleys, belts, etc.) since they spin or turn at high speeds when the engine is running.



**DO NOT TOUCH HOT ENGINE PARTS** to prevent severe burns. The motor's parts can get extremely hot when the engine is running.



**TURN THE IGNITION OFF BEFORE CONNECTING OR DISCONNECTING THE TOOL FROM THE BATTERY** to prevent damage to the tester or the vehicle's electronic components.



**DON'T SMOKE OR HAVE ANY FLAMES NEAR THE VEHICLE** when testing. Fuel and battery vapors are highly flammable.



**DO NOT WEAR LOOSE CLOTHING OR JEWELRY WHEN WORKING ON AN ENGINE.** Loose clothing can easily be caught in the engine's fan, pulleys, belts, etc., and jewelry is highly conductive, which may cause severe burns or electric shock if it contacts electricity.



**DO NOT CUT THE PRODUCT'S CORDS OR SUBMERGE THEM IN WATER.** The product is an electrical device that can cause shock and severe burns.



**WARNING: Battery acid is extremely corrosive. If acid gets into your eyes, RINSE THEM THOROUGHLY WITH COLD RUNNING WATER FOR AT LEAST 20 MINUTES AND SEEK MEDICAL ATTENTION IMMEDIATELY. If battery acid contacts your skin or clothing, WASH IT IMMEDIATELY WITH A SOLUTION OF WATER AND BAKING SODA.**

## **ABOUT THE BT100W**

The BT100W is a battery tester that applies the most advanced conductance testing technology and incorporates reverse polarity protection. It is designed to help technicians locate faults quickly by taking accurate measurements of the vehicle battery's actual Cold Cranking Amps (CCA) and State of Health (SOH), as well as testing the cranking system and charging system. With it, users can perform any of the tests on the tester itself or on an APP through their phone.

## **SECTION 1 WHAT'S IN THE BOX?**

**BT100W**

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**User Manual**

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**Quick User Guide**

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## SECTION 2 PRODUCT OVERVIEW

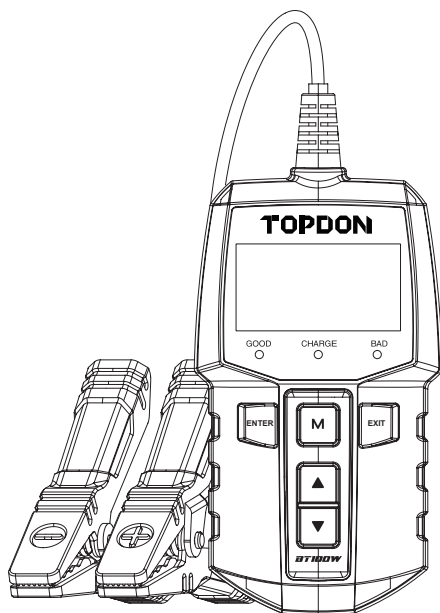


Figure 2.1

Buttons	Operations
▲	Page up; Increase the battery rated value
▼	Page down; Decrease the battery rated value
<b>EXIT</b>	Cancel; Return to the previous page
<b>M</b>	Main Menu
Black smart clamp	Connects to the battery's negative terminal
Red smart clamp	Connects to the battery's positive terminal

### Indicators

LED indicators	Communicates the Battery's Status
Green	Good (> 80% Capacity)
Yellow	Recharge (50~80% Capacity)
Red	Replace (< 50% Capacity)

## SECTION 3 GETTING STARTED

### 3.1 What Are the Most Commonly Used Car Batteries?

Cars are powered by lead-acid batteries. The most commonly used ones are listed below:

- **Flooded Lead Acid Batteries (Wet):**  
This is the oldest/most common car battery type, also known as a "SLI battery." The Flooded Battery is usually made of 6 cells with a liquid electrolyte solution of sulfuric acid and water that needs to be topped off periodically. This battery typically supplies a voltage of 12.6V at full charge.
- **Enhanced Flooded Battery (EFB):**  
This battery type also uses a liquid electrolyte solution. However, different from the Wet Flooded Lead Acid, it is sealed and maintenance-free. The Enhanced Flooded battery is usually seen in cars with simple start-stop technology, and can provide up to 85,000 engine cranks.
- **Gel Cell Battery (Gel) & VRLA Battery:**  
Gel batteries are similar to flooded batteries. Although for this type, calcium replaces the antimony in the lead plates, and silica is added to the electrolyte solution, turning the liquid into a gel.
- **Absorbent Glass Mat Battery (AGM):**  
AGM batteries are designed to deliver powerful bursts of starting amps and run for a long time. "Absorbed Glass Mats" are used to cushion the ultra-thin lead plates, allowing manufacturers to include more leads into one battery and provide more power. AGM batteries are divided into two categories according to the cell structure. They can be AGM FLAT PLATE or AGM SPIRAL. This type of battery is ideal for vehicles with automatic start-stop applications and braking energy recovery.

### 3.2 How to Identify What Type of Battery You Have?

Let's take the following picture as an example (See Figure 3.2.1):

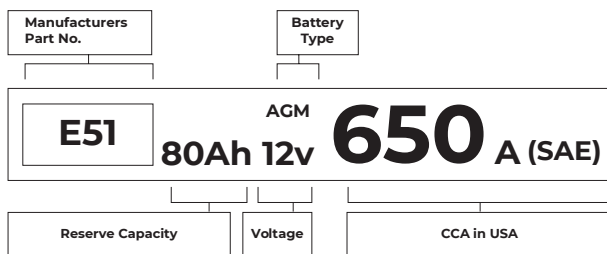


Figure 3.2.1



1) Reserve Capacity: 80Ah

The Reserve Capacity is a time measurement that explains how long a fully-charged battery can deliver a 25 amps current in an 80°F environment before the battery is discharged and drops to 10.5V.

2) Battery Type: AGM

3) Voltage: 12V

When fully charged, automotive batteries should measure at 12.6V. However, this measurement should be from 13.7 to 14.7V when the engine is running. If the battery tester reads less than this standard, it means that the battery's resting voltage is weak. In this case, typically, the battery needs to be charged or replaced.

4) CCA: 650A (SAE)

The CCA rating refers to how many amps a 12V battery can deliver at 0°F in 30 seconds while maintaining at 7.2V at least. This means that the higher the CCA rating is, the easier the engine can be cranked in cold temperatures.

### 3.3 Where Is the Battery of a Car Located?

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1) Most models hold the battery in the engine bay, under the hood, in one of the front corners. See battery location ① and ② in Figure 3.3.1.

2) To balance uneven weight distribution, some manufacturers hold the engine in the trunk. See battery location ⑤, ⑥, and ⑦ in Figure 3.3.1. In this case, the battery may have a plastic cover that should be removed prior to any testing.

3) For some models, the battery might be stored underneath the rear seat. See battery location ④ in Figure 3.3.1.

4) For other vehicles, the battery can be located underneath the passenger seat. See battery location ③ in Figure 3.3.1.

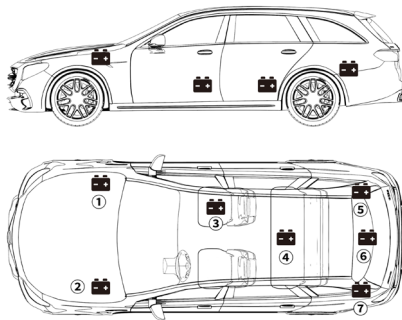


Figure 3.3.1

**WARNING:** DO NOT TEST THROUGH THE JUMPSTART POSTS. For models that hold the battery under the seat or in the trunk, the manufacturer usually includes jumpstart connector conductor posts under the hood (See Figure 3.3.2) to make jumpstarting easier. However, to ensure data accuracy and operation safety, DO NOT CONNECT THE BATTERY TESTER TO THE JUMPSTART POSTS.

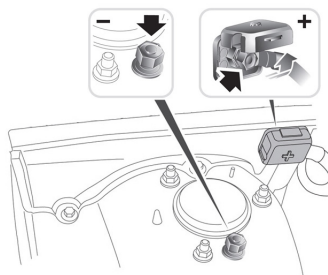


Figure 3.3.2

### **3.4 Connect the Clamps to the Battery Terminals.**

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- 1) Before connecting the clamps to the terminals, please use sandpaper to polish off any corrosion on the battery terminals. With this, you can avoid inaccurate test values.
- 2) Attach the red clamp to the positive (+) terminal and the black clamp to the negative (-) (See Figure 3.4.1).
  - ALWAYS KEEP THE RED & BLACK CLAMPS FROM TOUCHING.
  - ALWAYS DISCONNECT THE NEGATIVE CABLE FROM THE BATTERY FIRST AND RECONNECT IT LAST.
- 3) Once the clamps are properly connected, the battery tester will power on automatically and be ready to conduct tests.

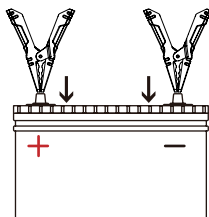


Figure 3.4.1

## SECTION 4 STANDALONE TEST MODE

For any of the tests (either via the device or APP), clamps must be connected securely to the corresponding terminal, that is, black to the negative terminal (-) and red to the positive terminal (+) (See Figure 3.4.1). After the connection is made, the BT100W will automatically start and display the interface as shown below (See Figure 4.1):

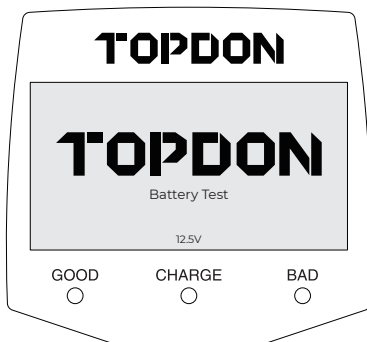


Figure 4.1

Select your preferred language from the available 8 languages.

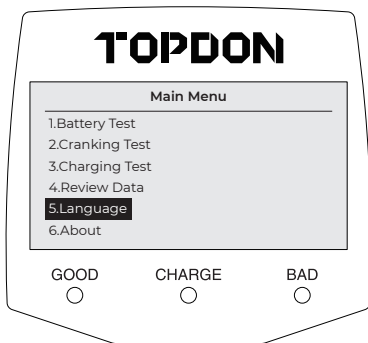


Figure 4.2

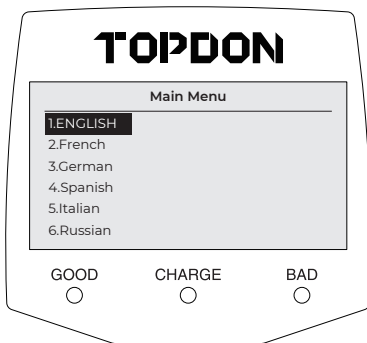


Figure 4.3

## 1. Battery Test

**Note:**

- 1) Turn off the engine and all accessories.
- 2) Turn on the vehicle headlamps for 10 seconds until the battery voltage drops back to normal value if the battery is just fully charged.
- 3) The test only applies to 12V lead-acid batteries.

Test Steps:

- 1) Select "1. Battery Test".

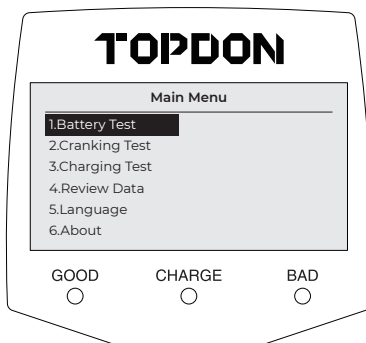


Figure 4.1.1

- 2) Select battery type (specified on the battery label) by pressing ▲ or ▼, and then press "Enter".

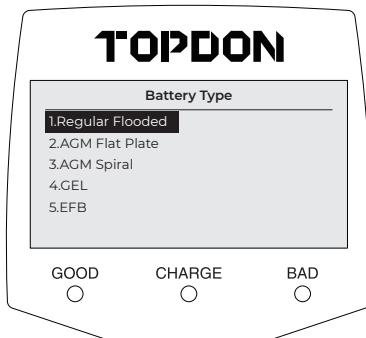


Figure 4.1.2

3) Select the correct testing standard by pressing ▲ or ▼, and then press "Enter".

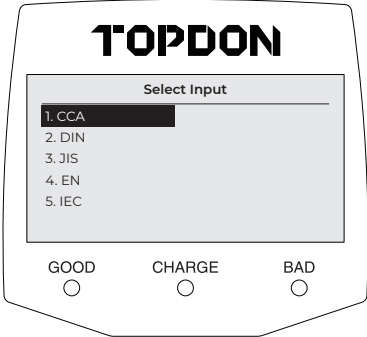


Figure 4.1.3

4) Select the correct rated value by pressing ▲ or ▼, and then press "Enter".

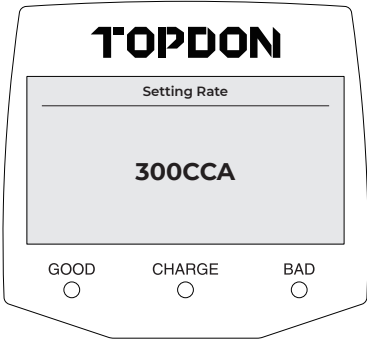


Figure 4.1.4

5) Test result will show as below (See Figure 4.1.5) (if there is any suggestion, please follow accordingly):

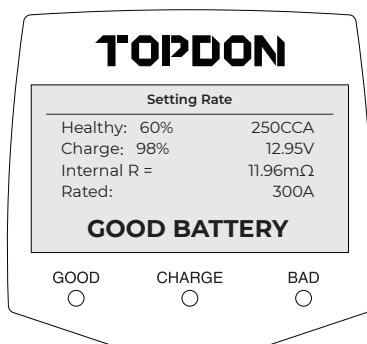


Figure 4.1.5

## 2. Cranking Test

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**Note:**

- 1) Turn off the engine and all accessories.
- 2) The test only applies to 12V lead-acid batteries.

Test Steps:

- 1) Select "2. Cranking Test" and press "Enter".

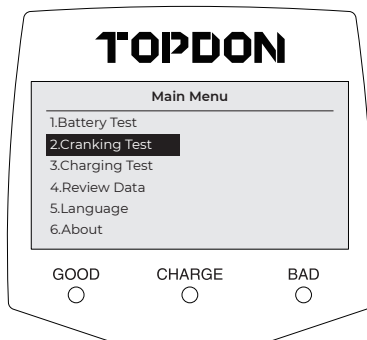


Figure 4.2.1

2) Start the engine as prompted and the test result will show as below.

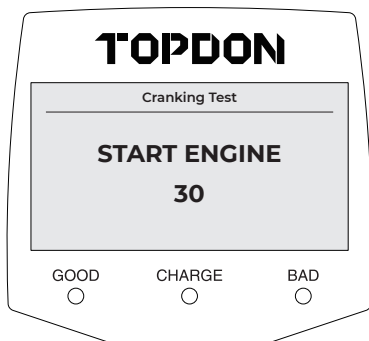


Figure 4.2.2

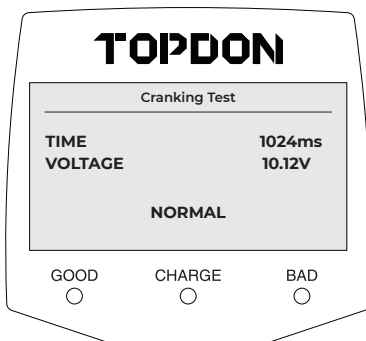


Figure 4.2.3

Refer to the table below to better understand the test result.

Item	Cranking Voltage (V)	Conclusion
1	$V < 9.6$	Cranking Low
2	$9.6 \leq V < 10.7$	Normal
3	$V \geq 10.7$	Good

### 3. Charging Test

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**Note:**

1) The test only applies to 12V lead-acid batteries.

Test Steps:

1) Select "3. Charging Test" and press "Enter".

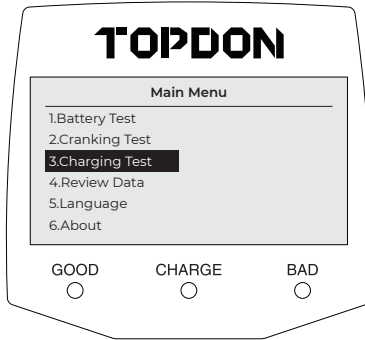


Figure 4.3.1

2) Start the engine as prompted and press "Enter" to start the ripple test.

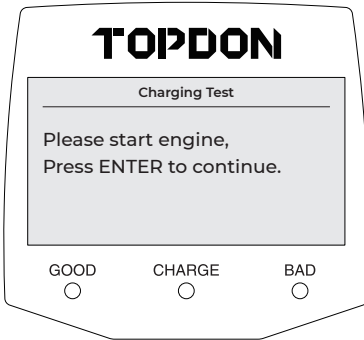


Figure 4.3.2

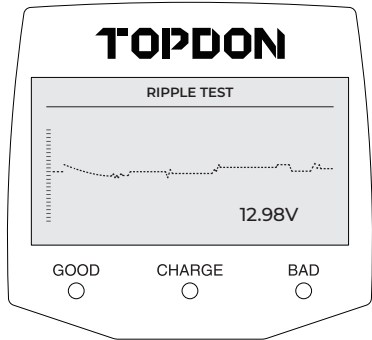


Figure 4.3.3



3) Wait for a few seconds for the load test to finish.

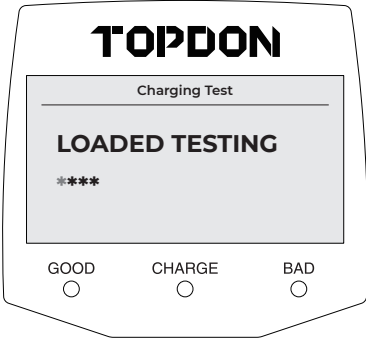


Figure 4.3.4

4) Increase engine speed and maintain at 2500 rpm for 5 seconds as prompted.

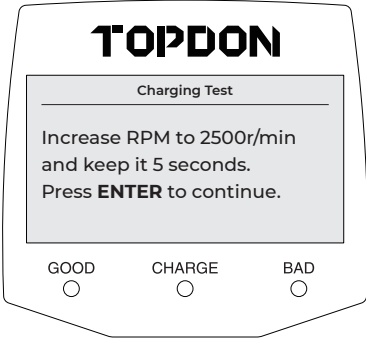


Figure 4.3.5

5) Press "Enter" and then the result will show as below (See Figure 4.3.6).

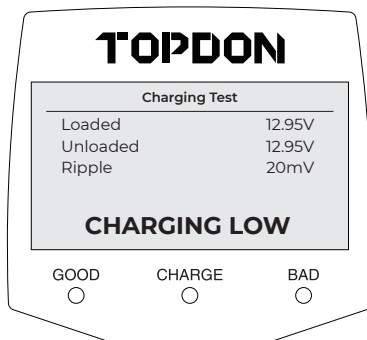


Figure 4.3.6

Refer to the table below to better understand the test result.

Item	Cranking Voltage (V)	Conclusion
1	$V < 12.8$	No Output
2	$12.8 \leq V < 13.2$	Charging Low
3	$13.2 \leq V < 15$	Charging Normal
4	$V \geq 15.0$	Charging High

## 4. Review Data

4.1 Select "4. Review Data".

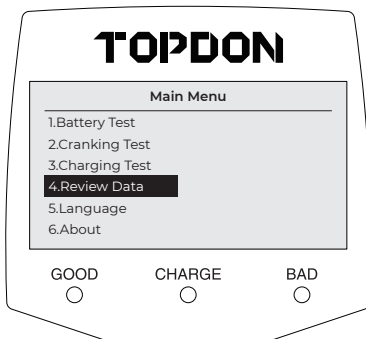


Figure 4.4.1

4.2 Press "Enter" to display the test results saved.

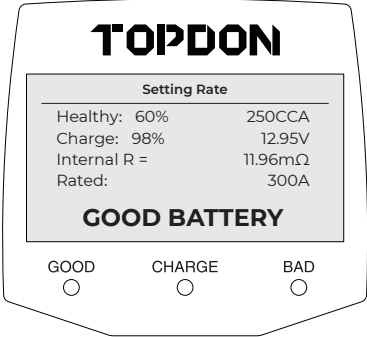


Figure 4.4.2

**Note:**

The device will only save and display the latest record of each tests. Latest results of each tests will be synchronized to and saved in the APP after the APP is installed and connected via Bluetooth. Records of all tests done via the APP side can be checked in the APP. Results of tests done via the APP will not be sent to the device.

# SECTION 5 TEST THROUGH BT100W APP

## 1. Download the APP and Install

Search BT100W in the App Store™ or Google Play™, download and install it to your mobile device.

**Note:**

This APP is compatible with iOS 10.0 or later/Android 5.0 or later.

## 2. Homepage

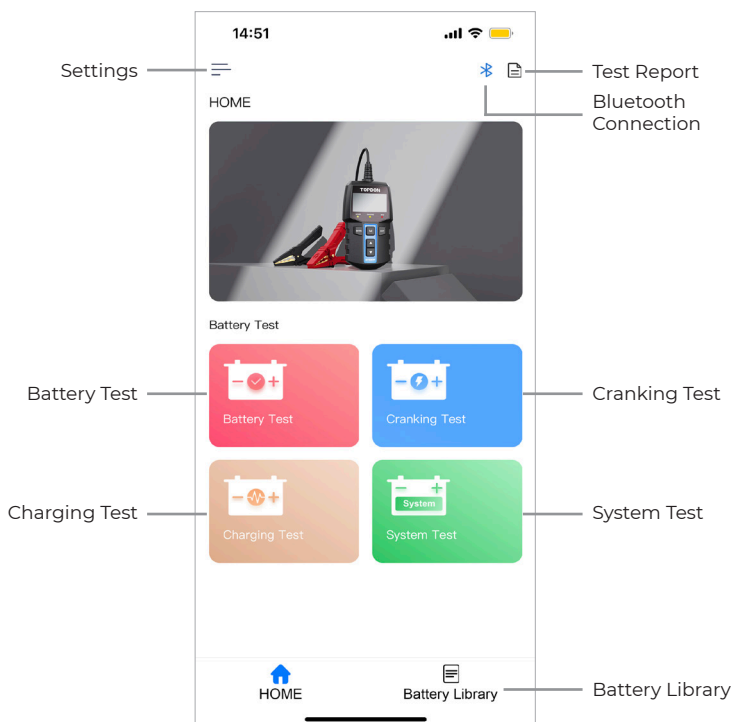


Figure 5.2.1

## Settings

- Feedback: If you have any doubts or suggestions, write a feedback to TOPDON technical team for support.
- Firmware upgrade: Tap it to check if any available upgrade has been released.

## Bluetooth Connection

Only after connecting the APP with the Bluetooth of the battery tester can tests via the APP be done. Tap the Bluetooth icon on the upper right to search BT100W and connect.

### **Note:**

Once the Bluetooth is connected, all buttons except Exit on the tester will stop working. Pressing Exit will terminate the test on the APP and resume the functions of buttons on the tester. After that, automatic Bluetooth connection will be not possible. You can only manually connect it again.

## 3. Battery Test

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### **Note:**

- 1) Turn off the engine and all accessories.
- 2) Turn on the vehicle headlamps for 10 seconds until the battery voltage drops back to normal value if the battery is just fully charged.
- 3) The test only applies to 12V lead-acid batteries.

### Test Steps:

- 1) Tap "Battery Test" to initiate the test.

- 2) Select battery type and battery standard, enter battery value.
- 3) Press "Next" and the test result will show as below (See Figure 5.3.2). You can save and share the test result with any individual or available applications.

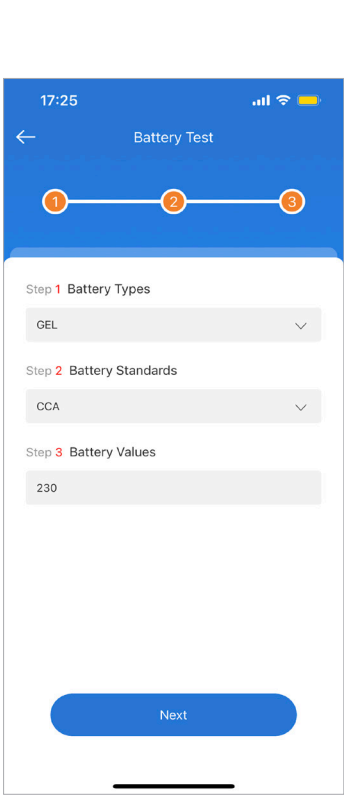


Figure 5.3.1

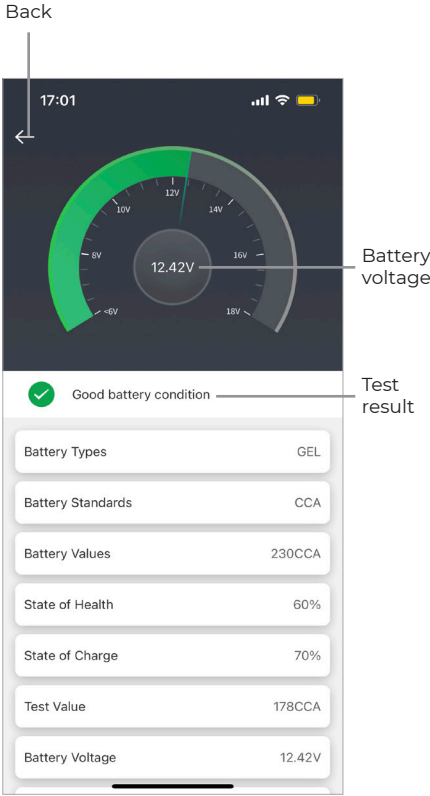


Figure 5.3.2

## 4. Cranking Test

**Note:**

- 1) Turn off the engine and all accessories.
- 2) The test only applies to 12V lead-acid batteries.

Test Steps:

- 1) Tap "Cranking Test" and press "Next" to start.
- 2) Turn off all accessories, press confirm and start the vehicle as prompted.

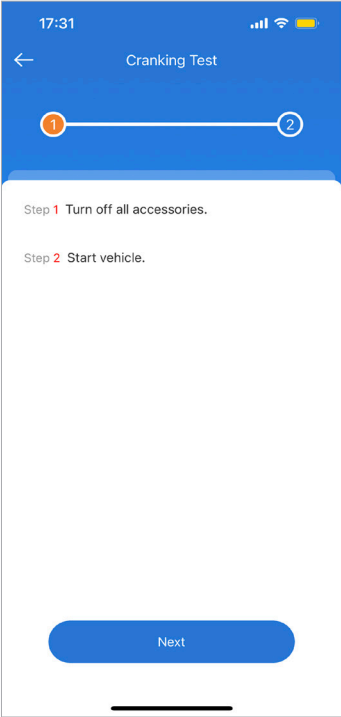


Figure 5.4.1

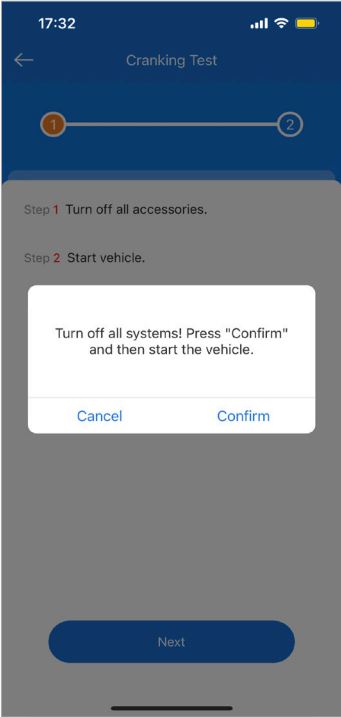


Figure 5.4.2

3) The test result will show as below (See Figure 5.4.3).

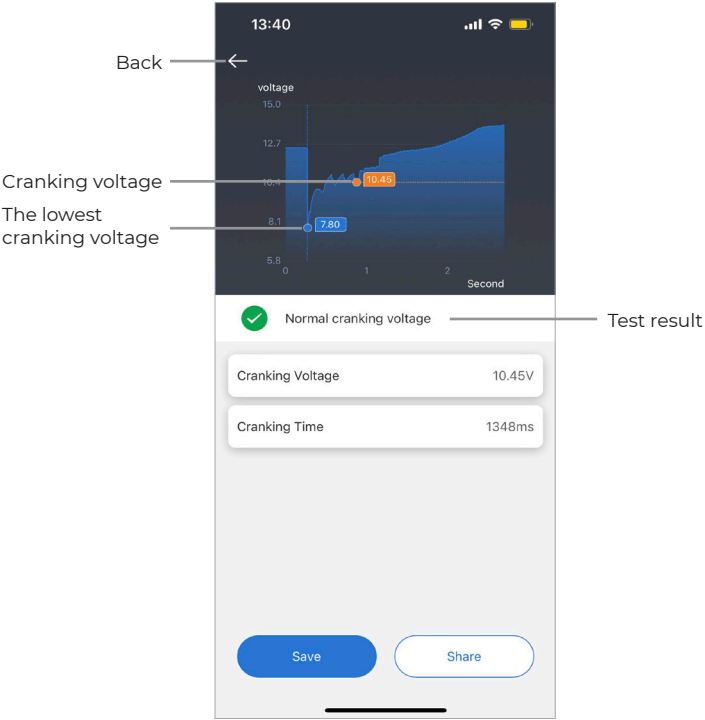


Figure 5.4.3



## 5. Charging Test

**Note:**

The test only applies to 12V lead-acid batteries.

Test Steps:

- 1) Tap "Charging Test" to initiate the test.
- 2) Press "Next", turn off all accessories and start the vehicle as prompted.

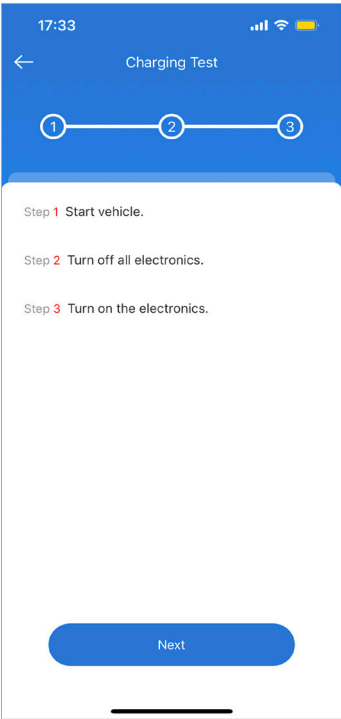


Figure 5.5.1

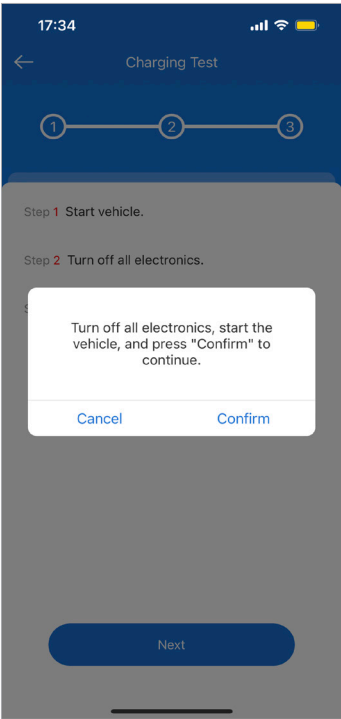


Figure 5.5.2

- 3) Press "Confirm" and then press "Next" to proceed.
- 4) With all accessories off, increase the engine speed and maintain at 2500 rpm.  
DO NOT RELEASE THE THROTTLE!
- 5) Press "Confirm" and then press "Next" to proceed.
- 6) Turn on the accessories as prompted and press "Confirm".

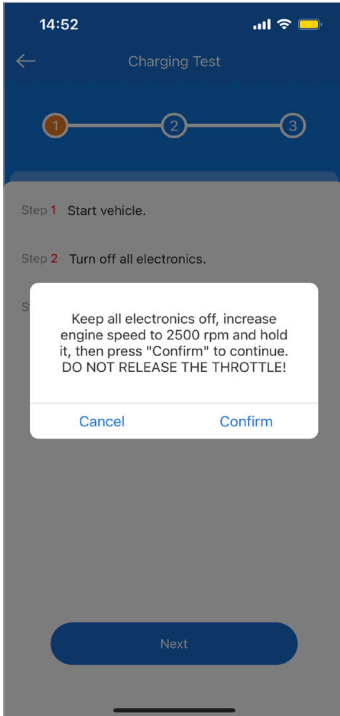


Figure 5.5.3

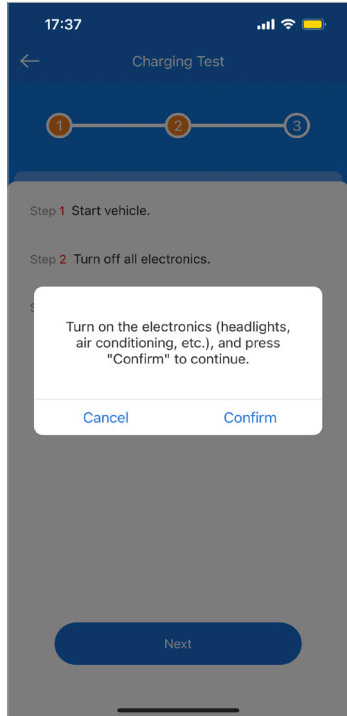
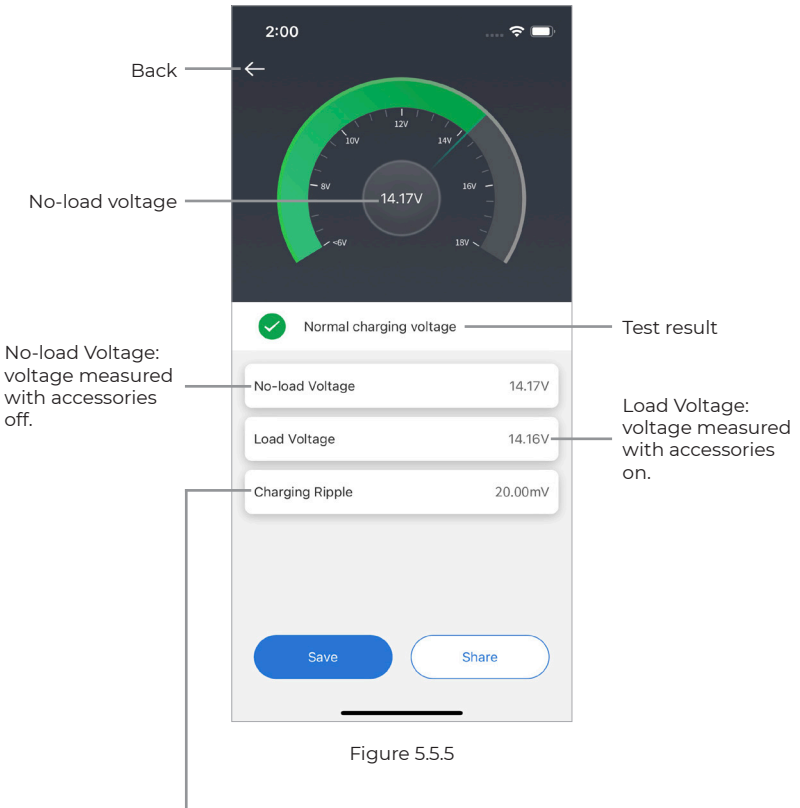


Figure 5.5.4

7) The test result will show as below (See Figure 5.5.5).



Charging Ripple: A vehicle's battery operates on one-way direct current (DC) electricity, while alternators output alternating current (AC) electricity. In this process, the power needs to go through the diode rectifier to turn into a direct current - that's when the ripple occurs.

## 6. System Test

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The system test performs all the above 3 tests in one procedure. The tests will proceed one by one and the result for each test will be displayed only when all the tests are finished (See Figure 5.6.1). Steps for the system test are the same as those for the previous 3 tests. Please follow accordingly.

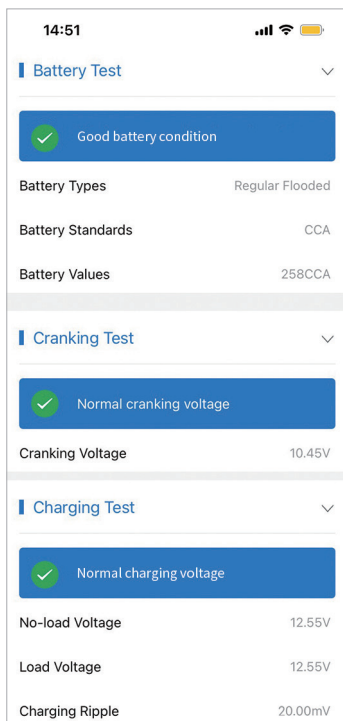


Figure 5.6.1

# 7. Test Report

Test Reports in the APP save all test records including those from the tester device. Tap the report icon on the upper right to view them and delete if needed.

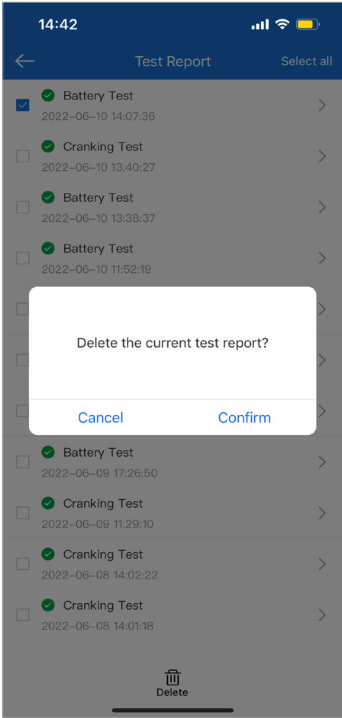


Figure 5.7.1

## 8. Battery Library

1) Battery Library is designed to check detailed information of the batteries. Press Battery Library on the homepage (See Figure 5.8.1) and follow the prompts to enter like TYPE, MAKE, MODEL, YEAR and CC (See Figure 5.8.2).

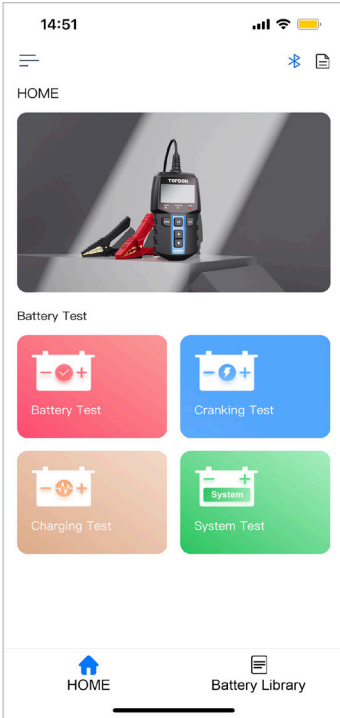


Figure 5.8.1

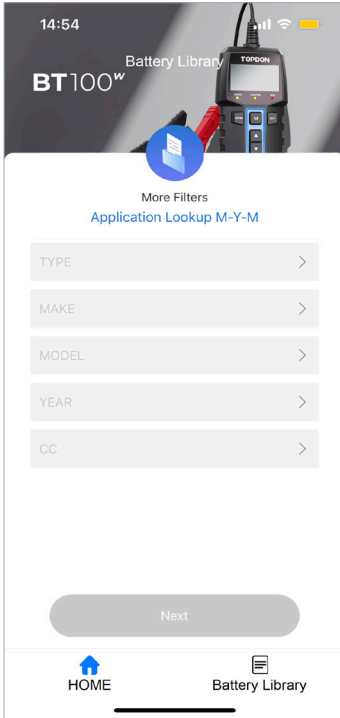


Figure 5.8.2

2) Details of your battery will be shown as below (See Figure 5.8.3).

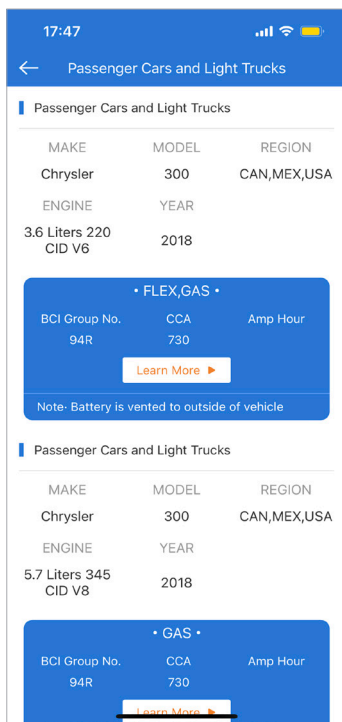


Figure 5.8.3

## SECTION 6 TECHNICAL SPECIFICATION

<b>Display</b>	<b>128 x 64 LCD display</b>
<b>Working Temperature</b>	<b>-10°C~55°C (14°F~131°F)</b>
<b>Storage Temperature</b>	<b>-20°C~75°C (-4°F~167°F)</b>
<b>Dimensions</b>	<b>136.5 x 75.5 x 22.5mm (5.37 x 2.97 x 0.89")</b>
<b>Weight</b>	<b>246g (8.68 oz)</b>

## SECTION 7 FAQ

Q: Is the BT100W able to test vehicle alternator?

A: Yes. It can.

Q: Will the BT100W save the most recent test results in memory?

A: Yes. It will keep the most recent test results in data review.

Q: Is the BT100W able to test motorcycle batteries?

A: It can test 12V batteries between 100 and 2000 CCA. If relevant specifications of the motorcycle battery lie in the testing range, tests will be applicable.

Q: Can the firmware be updated?

A: Yes. You can check for any update under the "Settings" section in the APP.

Q: How to set the CCA range?

A: You can set the data near to the CCA standard number of your battery.

Q: Does the BT100W test 12V deep cycle batteries?

A: Yes. It does.

Q: Will the BT100W work with marine batteries?

A: Yes. It can work with marine batteries.

Q: Will the BT100W accurately load test ATV batteries?

A: Yes. It can accurately load test ATV batteries.

Q: What does SOH, SOC, and RES mean?

A: The SOH refers to the "State of Health". The SOC is the "State of Charge" and the RES is the "Resistance Value" of the battery.



## SECTION 8 WARRANTY

### TOPDON One Year Limited Warranty

The TOPDON Company warrants to its original purchaser that TOPDON products will be free from defects in material and workmanship for 12 months from the date of purchase (Warranty Period). For the defects reported during the Warranty Period, TOPDON will, according to the technical support analysis and confirmation, either repair or replace the defective part or product.

This limited warranty is void under the following conditions:

- Misused, disassembled, altered or repaired by a non-TOPDON technical repair specialist.
- Careless handling and/or improper operation.

**Notice: All information in this manual is based on the latest information available at the time of publication, and no warranty can be made for its accuracy or completeness. TOPDON reserves the right to make changes at any time without notice.**

## SECTION 9 FCC WARNINGS:

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.







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