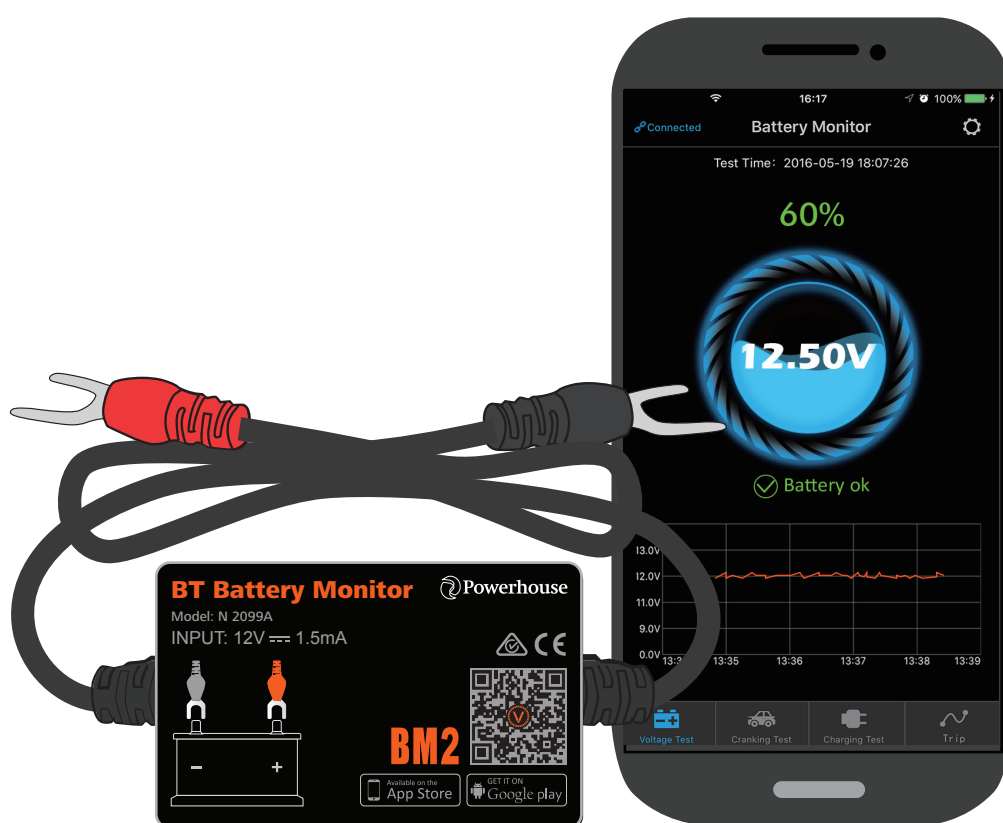


12V Bluetooth Battery Monitor

Operating Instructions



Battery Monitor

APP

This product is used to monitor the status of automotive batteries, cranking and charging systems. Firstly the user must install the monitor to the battery then connect it to your smartphone using the BM2 app. The connection is made via Bluetooth. If problems occur with the battery, cranking and charging systems the app will send an automatic notification alert to the users. This can help you quickly identify and diagnose problems with your vehicles battery or monitor auxiliary battery usage. With the app the user can also review/record trips and tests.

Please Note: This item that it is not suitable for lithium batteries.

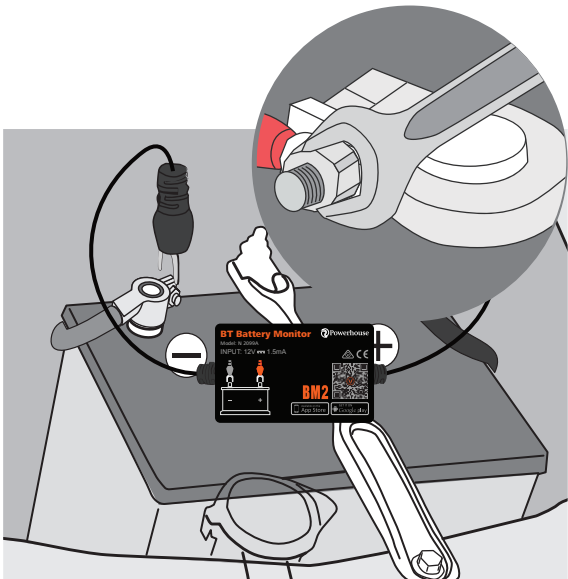
1.0 Product Parameters

Average Current	1.5mA	Short-circuit Protection	Built in
Input Voltage	12V	Reverse Connection Protection	Built in
Operating Temperature	- 40℃~90℃	Bluetooth	4.0
Physical Dimensions	5.5*3.5*1.6cm	Bluetooth Name	Battery Monitor
Voltage Accuracy (9-16V)	± 0.03V	App Keyword	BM2

2.0 Product Safety Performance

- Product shell and wire made by fireproof materials are durable for high temperature.
- Built-in short circuit prevention safety switch, it will automatically cut off power when current is too large. Also reverse connection protection built-in, will not damage vehicle and product in case of reverse polarity.

3.0 How to Install the Product

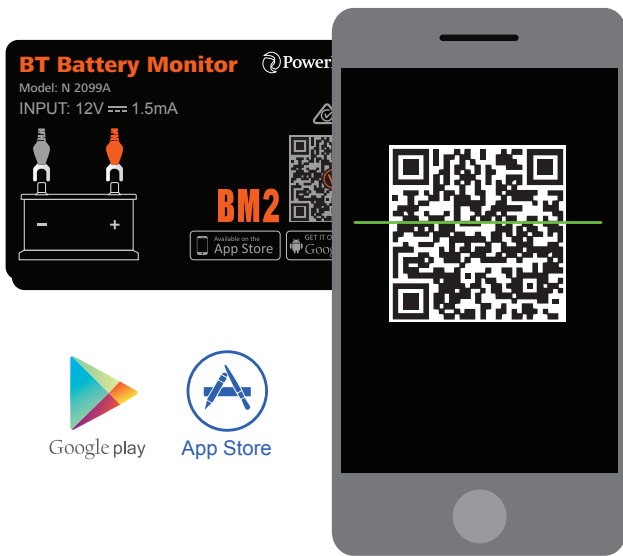


(Fig 1)

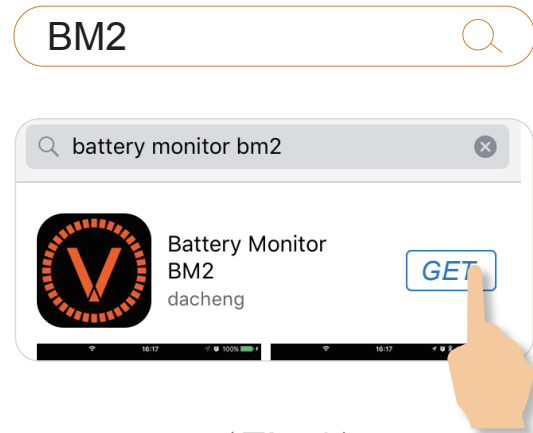
Install battery monitor to the battery of the vehicle

1. Install red connector to positive pole and black to negative pole, then tighten/fix them.
2. Fix the product body with velcro. Try to find a paste position that Bluetooth signal will not be blocked. Clean the surface before pasting.

4.0 App Installation



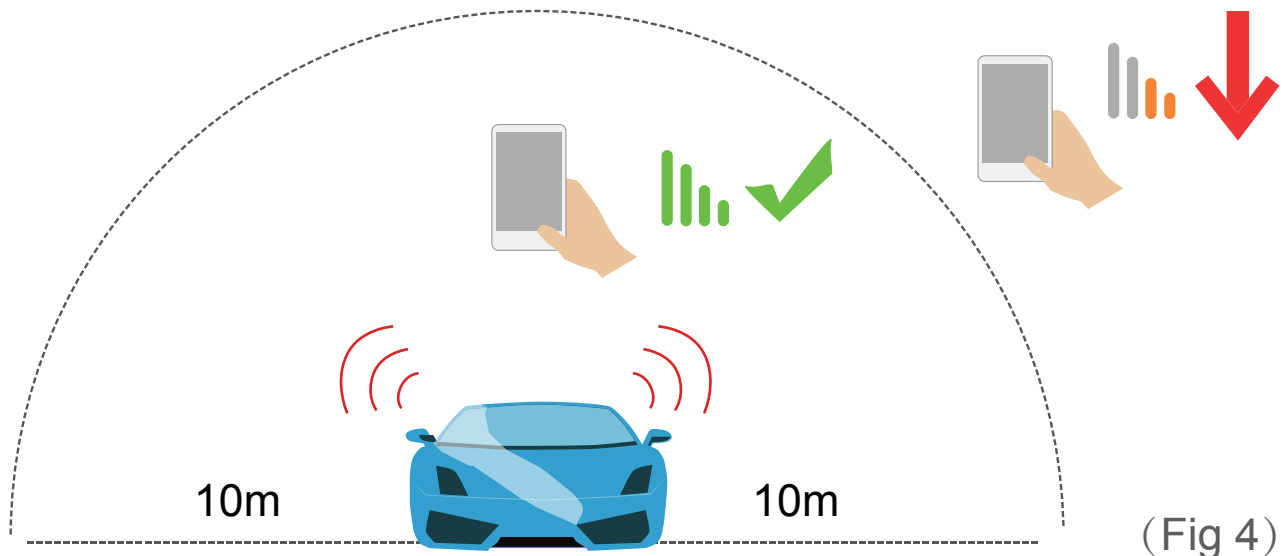
(Fig 2)



(Fig 3)

1. Scan the QR code of the product. (Fig 2)
2. Search BM2 on App Store or Google Play to download app. (Fig 3)

4.1 App Using Scene



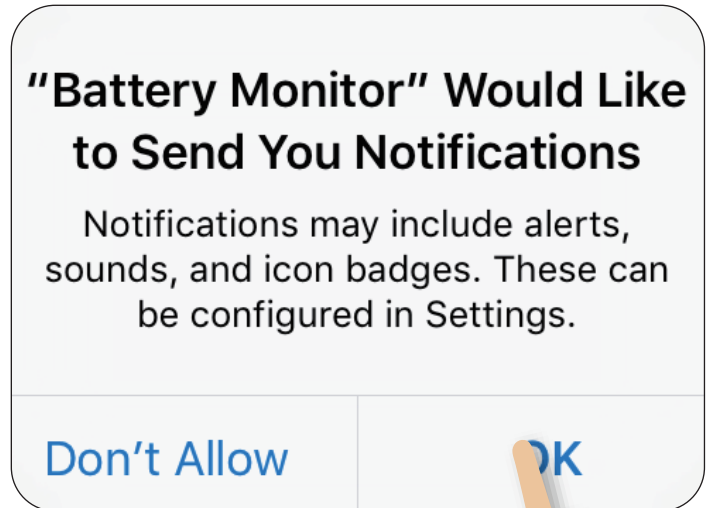
(Fig 4)

If no blocked, the mobile can receive the signal in 10 meters between the mobile and product. If exceed 10 meters or block exists, it will affect the signal strength.

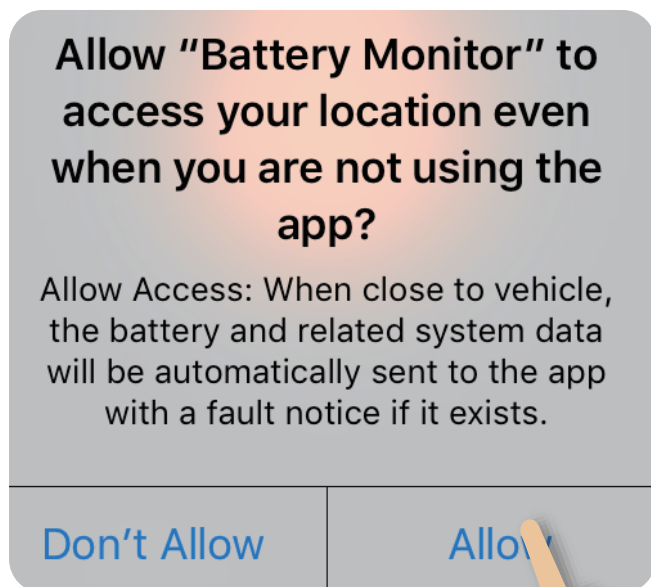
4.2 App Operation

4.2-1. Click app icon, run app, it is necessary to turn on the Bluetooth of mobile

4.2-2. Please allow app to access location even when not using app. If not, the product will not automatically notify the user when monitoring the problem.



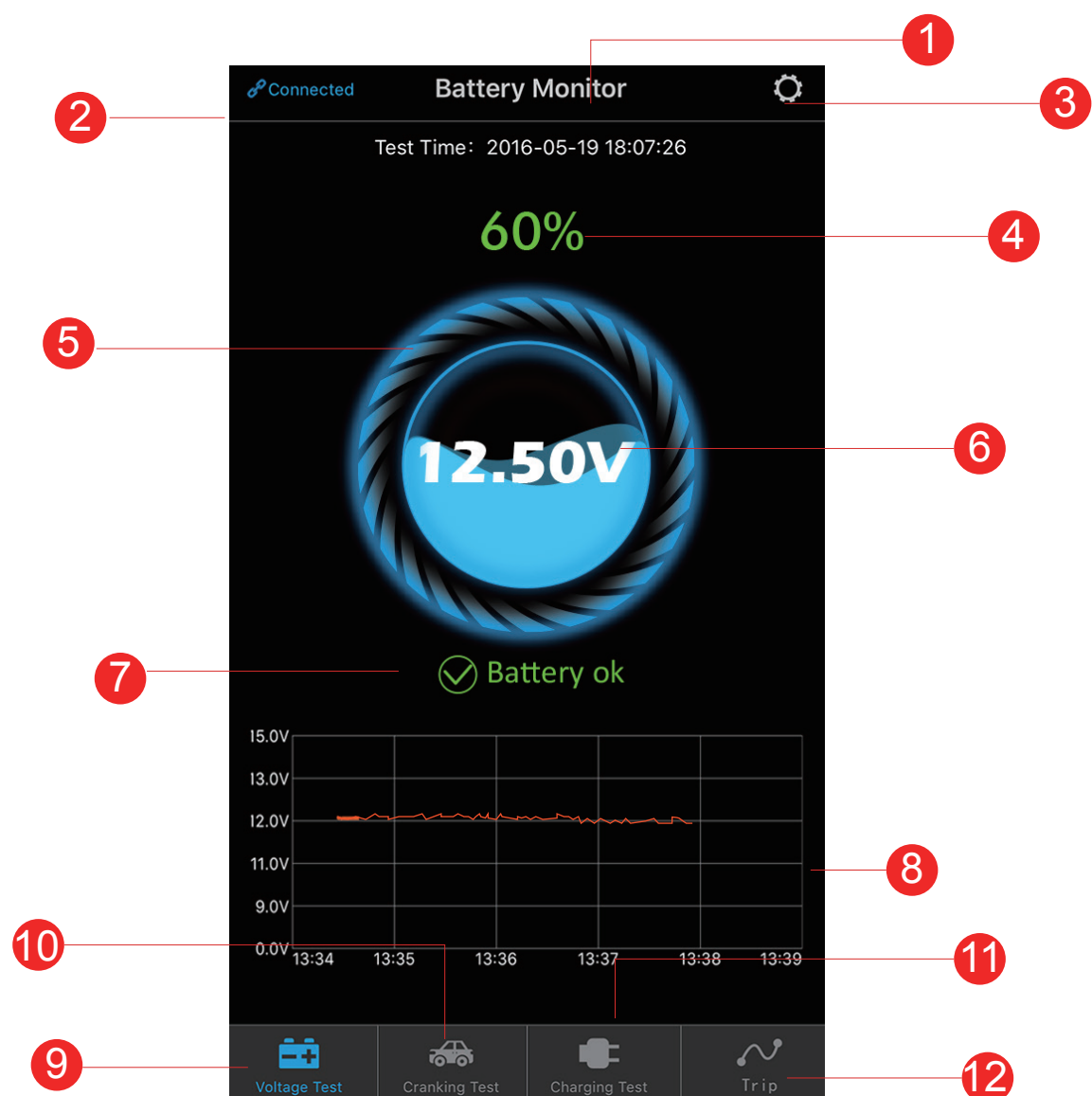
(Fig 5)



(Fig 6)

4.2-3. Please allow to receive notifications. Notifications including the car battery, cranking system and charging system and problem alert. If not, it can not receive relative notification. While if allowed, when the mobile phone enters the range of Bluetooth, it will receive the information notification no matter if the app is running or not.

4.2-4. App Interface Instruction—First Interface

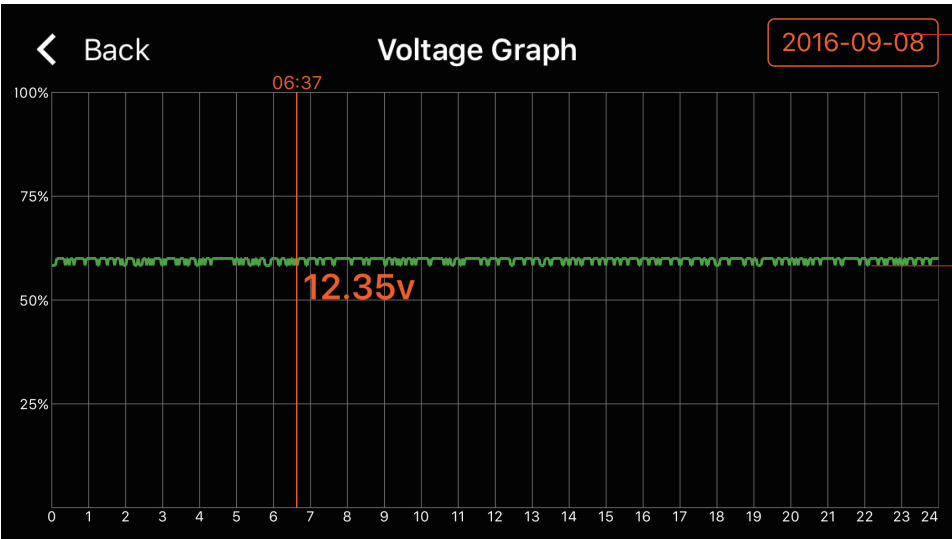


(Fig 7)

- 1. It shows the device name, as defaulted, it will be the device ID No. The user can set the nickname in the Device Management of System Setup.
- 2. Connecting status is shown in blue text. The disconnection status is shown in red text. When a default occurs, it will reconnects to the latest device automatically. It also can connect or disconnect manually.
- 3. System Setup icon, click to enter System Setup.
- 4. Show battery state of charge.

- 5. At charging status, the battery ring will be dynamically rotating.
- 6. Show battery real-time voltage, and graphical display the state of charge.
- 7. Battery status: 1. Battery OK (Green), 2. Charging (Green), 3. Low Power (Red).
- 8. Show battery real voltage graph, click the table of graph, it can review the voltage graph every day.
- 9. Battery voltage test icon, it is defaulted as first interface, selected status is blue, the others are grey.
- 10. Cranking system test icon, when the engine start each time, it will test cranking system automatically, selected status is blue, the others are grey.
- 11. Charging system test icon, it can test charging system manually, selected status is blue, the others are gray.
- 12. Trip record icon, records each starting time, stopping time and driving time of the vehicle, selected status is blue, the others are grey.

4.2-5. App Interface Introduction—Voltage History Graph



1

2

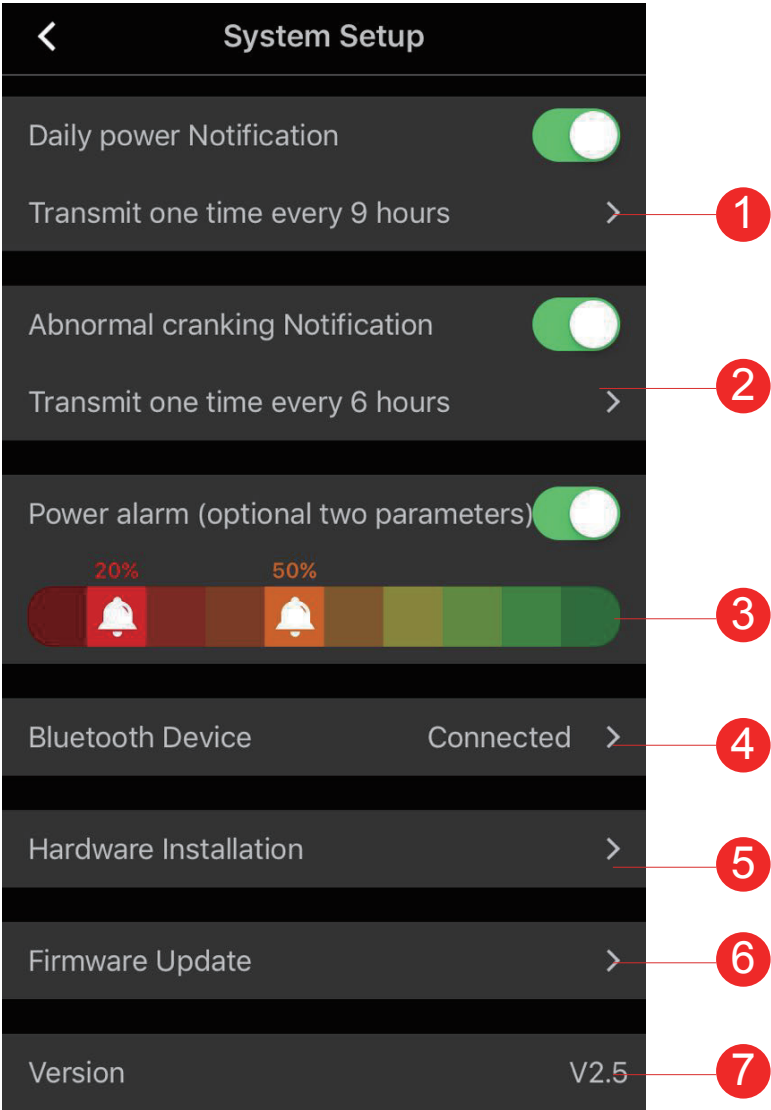
(Fig 8)

2016-05						
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4
5	6	7	8	9	10	11

(Fig 9)

- 1. Date select: click it to bring up calendar, orange icon shows that it can review the voltage graph at selected date. If there is red digits in calendar, abnormal voltages may have occurred.
- 2. Voltage history graph, click the graph, Silder will appear at the top of the slider indicates the test time, the orange figure below the graph indicates the voltage value during this time period.

4.2-6. App Interface Introduction—System Setup

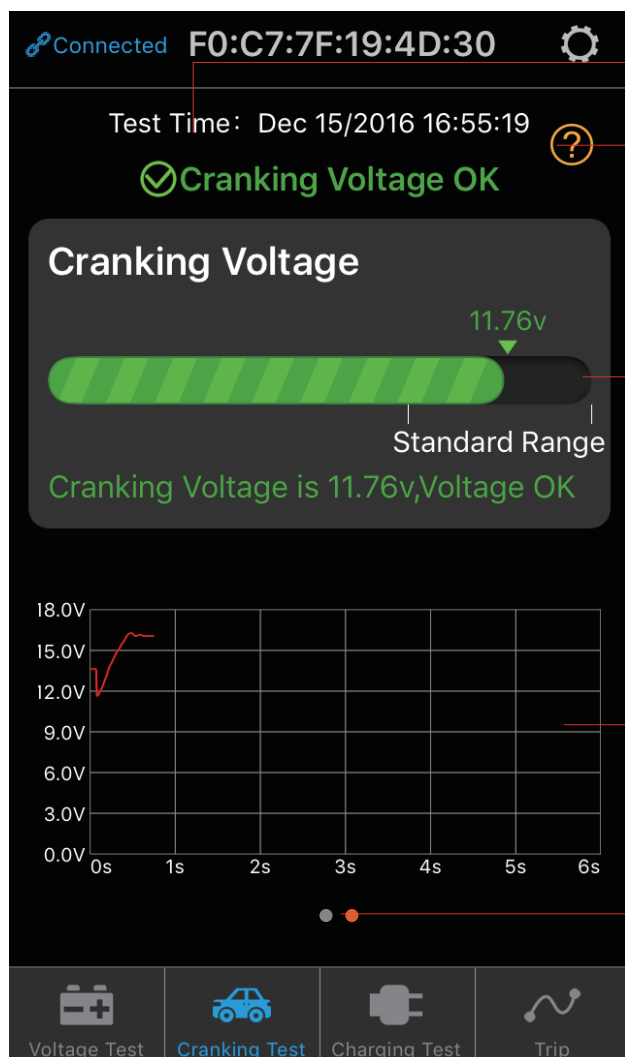


- 1. Daily Notification Alert Setup : green is on, grey is off. System default is no more than one notification in 6 hours, the notification frequency can be set.
- 2. Abnormal cranking Notification: green is on, grey is off. System default is no more than one notification in 6 hours, the notification frequency can be set.
- 3. Power alarm: slide the bell icon, two parameters can be set freely. When battery power falls to reach either value, user will receive app notification about charge level.

(Fig 10)

4. Bluetooth Device Setup: click to enter Bluetooth device system setup. User can search nearby device, also can review the history of devices connected before. Bluetooth device name can be edited.
5. Hardware Installation: user can review the installation introduction.
6. Firmware Upgrade: user can review the hardware version, also can upgrade new firmware once new version available.
7. Version: display the current app version number.

4.2-7. App Interface Introduction—Cranking Test



(Fig 11)

1. Engine start time.
2. Cranking test: when engine starts, the device will test the cranking system automatically and store the test result. Usually, if the cranking voltage is higher than 9.6V, it means normal. But if the cranking voltage is less than 9.6V, it means abnormal. If the cranking voltage is too low, maybe aging of battery, low power, or starter fault etc.
3. Display the cranking voltage values, green color means healthy, red color means unhealthy.
4. The cranking voltage graph.
5. Can display the recent two test results, the orange dot means the selected page.

4.2-8. App Interface Introduction—Charging Test

Step 1
Idle Condition Test

1. Start engine
2. Turn off any devices which consume power while in idle. For instance, radio, air conditioning, devices connected to cigarette lighter
3. Turn on headlights only

Start Testing

1

(Fig 12)

Second Step
High RPM Voltage Test

Increase RPM to 2500r/min and Hold for 5 seconds



Testing...

2

(Fig 13)

Connected bye ⚙️

Test Time: 2016-12-15 18:44:38 ?

✓Charging System OK

Charging Voltage in Idle Speed

13.99v



Standard Range

Voltage 13.99v, Voltage OK

Charging Voltage in High RPM

13.98v



Standard Range

Voltage 13.98v, Voltage OK

Test Again

Voltage Test

Cranking Test

Charging Test

Trip

4

3

5

6

7

(Fig 14)

1. Click to start the test, automatically test idle condition voltage, then jump to Fig 13.

2. For high RPM voltage test, it is necessary to increase RPM as below and hold for 3-5 seconds, then test is finished.
4cyl – 2500/min
6cyl – 2000/min
8cyl – 1600/min

3. Description of charging voltage Test:
3-1. Charging Voltage: normal
Charging system shows the alternator output normal, no problem detected.

8

3-2. Charging Voltage: low

Charging voltage is low. Check engine transmission belt has slipped or disconnect, check whether the line connection between alternator and battery is normal or not. If transmission belt and line connection is good, please follow the car manufacturer's recommendations to exclude the alternator failure.

3-3. Charging Voltage: high

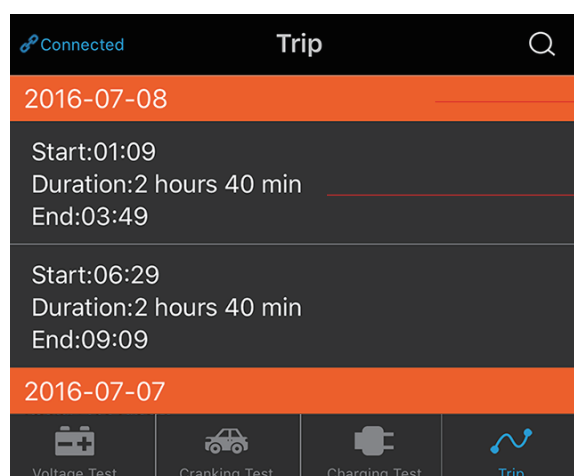
The alternator output voltage is too high. Since most automotive engines use built-in regulator, you will need to replace alternator assembly(Old vehicles use external regulator, please replace regulator directly). Common voltage limits for automotive regulator is $14.7\pm0.5V$. High charging voltage will overcharge the battery and shorten its life, also cause it to malfunction.

3-4. No Voltage Output: no engine voltage output is detected

Check whether the alternator cable and the alternator belt are working properly.

4. Charging test finishing time.
5. Voltage under idle test, green is ok, red is abnormal.
6. High RPM voltage test, green is ok, red is abnormal.
7. Click button to re-test.

4.2-9. App Interface Introduction—Trip Record



(Fig 15)

1. Click search button to review driving records via selecting date.
2. Date separator bar, specific to a certain day.
3. Starting time, running time and misfire time of each drive.

5.0 Tips

1. Product should not be used beyond the specified voltage range (6-20V), excessive input voltage may damage the device.

2. App requires smartphones with: Android 4.3 or IOS 10.0 or later.

3. When mobile enters Bluetooth range, users will receive notification.

4. If first time select “not allowed to access location”, you will not receive notification alert. If want to use this function in future, you can open the location in phone Settings by selecting “always allow location access”.

5. If the daily test alert function is not open, when the mobile is close to device, it also cannot get notification of the daily test result. You can set to allow notification both in app and phone's Settings.

6. If the exception test alert function is not open, when the mobile is close to device, it also can't get notification of monitoring exception. You can set to allow notification both in app and phone's Settings.

7. Firmware update will clear all data in the device, please open app waiting for sync finished before update firmware.

8. All historical data will be stored in the phone side, app upgrade will not lose the data history. But if app is uninstalled, the phone terminal data will be cleared.

9. The device will automatically monitor vehicle battery, cranking and charging systems, device can store data up to 31 days. Please use the app or make phone enter device Bluetooth range at least one time within each 31 days. Then device data history will be synchronized to phone.

10. If app can not search Battery Monitor, please ensure mobile's Bluetooth is on and close to the device without interference.