MA98412 INSTRUCTION

This product is designed to monitor the battery, cranking system and charging system of a vehicle. It can be used to monitor a stand-alone 12V battery too.
After being connected to the battery, the device needs to be connected to a mobile device (phone or tablet) via a mobile App. The App will then alert the user to the voltage of the battery and fault conditions when the mobile device is within Bluetooth 4.0 range (about 10 meters). It will also record the duration of any engine run time to be able to monitor trip duration.

1.0 Product Specifications

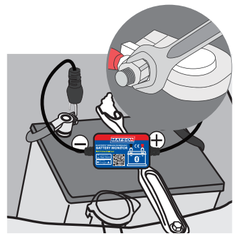
Average Current	1mA
Input Voltage	6~20V
Operating Temperature	-40°C~90°C
Physical Dimensions	5.5*3.5*1.6cm
Voltage Accuracy (9-16V)	±0.03V
Short-circuit Protection	Built in
Reverse Connection Protection	Built in
Bluetooth Version	4.0
Bluetooth Name	Battery Monitor
App Name	BM2

2.0 Product Safety Specifications

The product case and cable materials are designed to withstand high temp environments, up to 90 degrees Celsius, so mounting to a battery in the engine bay is okay in most instances.
It also features built in short circuit protection and reverse polarity protection to protect both the vehicle and the unit in case of reverse polarity connection.

3.0 Installation

Note: Be very careful not to disconnect car battery leads from battery during installation, you may lose vehicle memory settings!

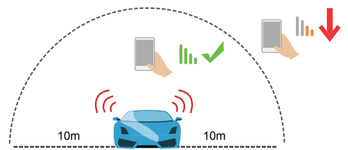


1) Firmly attach the Red connector to the Positive (+) battery terminal and the Black connector to the Negative (-) battery terminal.

2) Using the double sided Velcro provided, attach the product to the vehicle battery. Clean the surface that the unit will be attached to first. It is recommended to attach the unit to the top of the battery to minimize interference with the communication signal.

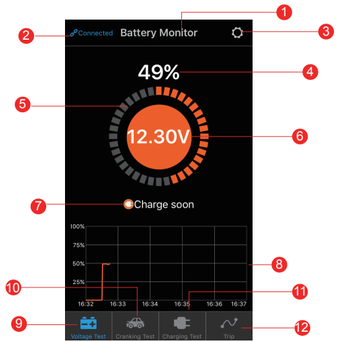
4.0 App Installation

1) Scan the QR code on the product, which will direct you either to the App Store or Google Play, then download and install the App.
OR
2) Search on the App store or Google Play for the app named BM2. Download and install the app.



Note: Without any interference, your mobile device will be able to communicate with the battery monitor out to a distance of 10 metres. If there are solid objects in the way, this distance will be reduced.

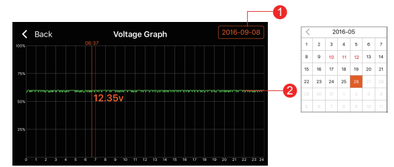
4.1 App Interface



1. This is the device name, and can be changed to your preference under Device Management in the System Setup menu
2. Displays connection status; Blue writing indicates connection, Red writing indicates disconnection
3. Is the System Setup icon, touch this to enter System Setup menu
4. Shows the state of charge of the battery as a percentage; 100% is fully charged
5. Is the Charge Status Ring; this is a graphic representation of the battery state of charge, and will change as the state of charge changes

6. This is the actual voltage of the battery. For reference the battery is considered Full above 12.7V, OK between 12.7V and 12.4V, and Need To Charge below 12.4V
7. Quick status indication; Blue is OK, Orange is Charging, Red is Low Battery
8. Is the recent Actual Battery Voltage Graph. Touch this graph to open the Voltage History Graph to see the last 24 hours and previous dates
9. Battery Voltage test icon. This is the default screen and will be the first displayed when the app is opened
10. Cranking System test icon. Starting the vehicle with this selected will perform a starting system test, and report results
11. Charging System test icon. Selecting this while the vehicle is running will test the vehicle charging system (alternator)
12. Trip record icon. The unit records the duration of engine run time to keep a record of trip duration. Pressing this button will display recent trip activity

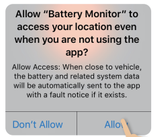
4.2 App Interface – Voltage History Graph

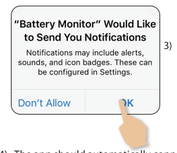


1. Date Select: Press this to display a calendar. Press a particular date to see the voltage recorded over that 24-hour period. Dates displayed in Red have voltage abnormalities (below 12.4V) or problems to report
2. After selecting a date, a graph will be displayed. Touching the screen will display the exact voltage and time at that point. Slide your finger across the graph to find precise points

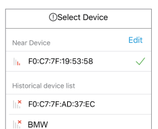
4.3 App Operation

1) Stand within 5 metres of the battery monitor and open the app on your smart device
2) You will need to allow the app to access your location even when not in use. If this is not enabled, the device will not be able to send notifications to your mobile device.



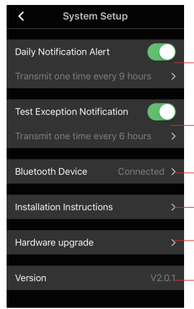


3) You will also need to allow your mobile device to receive notifications. If this is not enabled, your device will not be able to receive information and notifications from the battery monitor.
4) The app should automatically connect to the battery monitor, and the voltage will show on the screen. If this does not happen, check your Bluetooth is enabled on your device, then enter the "System Setup" menu, open the "Bluetooth Device" tab and select the Battery monitor. Before you rename the monitor it will show up as something like – F0:C7:7F:19:4D:30. This name can be changed by opening the "Select Device" menu and pressing "Edit".



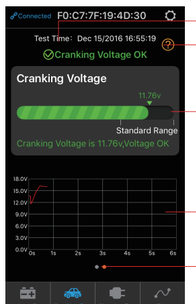
5) Multiple battery monitors can be operated from the one app, so you can have a monitor for each of your batteries.

4.4 App Interface – System Setup



1. Change this slider on and off to receive a daily notification of battery condition (when in range). Default is 1 notification each 6 hours (when in range), but this frequency can be set to suit user requirements
2. Change this slider on and off to receive Test Exception notifications (when in range). Frequency can be set to suit user requirements
3. Bluetooth Device Setup: Displays current connection status. Press this to enter system setup. This is where to search for nearby devices, review other connected devices, or switch between multiple devices connected to different batteries. This is also where the battery monitor can be renamed
4. Installation Instructions – Instructions for device installation are here.
5. Hardware Upgrade – Sometimes the software of the battery monitor will be upgraded to improve the user experience or performance of the product. This done via a firmware upgrade. When required, go to this menu setting and you will be prompted to download the small update.
6. Version – Shows the current app version number.

4.5 App Interface – Cranking Test



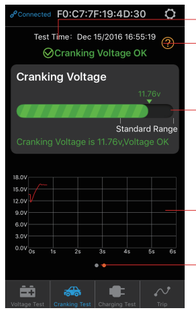
1. Test time and date
2. Test Result: Displays Cranking Voltage Result. As the engine starts, the device measures the voltage level during the starting process. Usually, if the voltage is 9.6V or greater, the system is ok. If the voltage is below 9.6V it can be an indication of an abnormality such as an ageing or damaged battery, or a starter fault etc. If the result is not OK, seek further advice from an auto electrician or mechanic.
3. Cranking Voltage Values: Bar displays the actual cranking voltage. A green bar indicates good voltage, a red bar indicates a problem.
4. Cranking Voltage Graph: This graph displays cranking voltage over the time taken to start the engine.
5. Historic results: Swipe sideways to view the previous test result (max 2 tests). Orange dot indicates which page you are viewing.

4.6 App Interface – Charging Test

Start the engine.

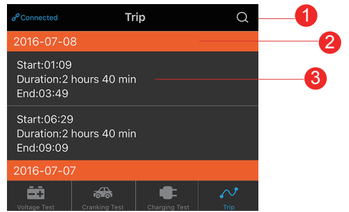
MAKE SURE THE VEHICLE IS IN NUETRAL GEAR – DO NOT PLACE IN FORWARD OR REVERSE!!!!

With the engine running, follow on screen instructions to turn off anything in the vehicle that will consume energy as engine idles (lights, air con etc.) then;



1. Start Test: Press the start test button.
2. High RPM Voltage Test: Increase RPM to 2500/ min and hold steady for 5 seconds.
3. Test description: Press the ? button for a full description of the test, and explanations for possible results.
4. Charging Test finishing time and date
5. Voltage at Idle test result: Green is OK, Red indicates a problem.
6. Voltage at High RPM test result: Green is OK, Red indicates a problem.
7. Test Again: Press this to perform the tests again.

4.7 App Interface – Trip Record



1. History: Press the Magnifying Glass icon to select a date to review.
2. Date Bar: Separates dates between trips.
3. Shows start time, trip duration and finish time.

5.0 Operation Tips

1) Product should not be exposed to higher than 20V or it will be damaged.

2) App requires smart devices. Earliest compatible versions are Android 4.3 and iPhone 4S

3) Mobile device will only receive notifications within Bluetooth range (10M)

4) During initial setup, if the user does not allow the mobile device to access location data, the mobile device will not receive notifications. This can be fixed by entering the mobile device settings menu and allowing access to location data for the app.

5) If the "daily test alert" or "daily exception alert" functions are not enabled in the app, the mobile device will not receive these notifications. They can be enabled in the app at any time.

6) Firmware updates will clear all data in the device if not allowed to sync to the app first. To avoid this, make sure the mobile device is in range of the battery monitor and allow the sync to complete before starting the firmware update.
7) If the app is upgraded or updated, all historic data will be retained. If the app is deleted from the mobile device, all historic data will be lost.

8) The battery monitor device can monitor and store up to 35 days of data without syncing to the mobile device. If the Mobile device does not come within range of the battery monitor for more than 35 days, the old data will be discarded to make space for new data.

9) On setup, when the mobile device is searching for the Bluetooth battery monitor, make sure the mobile device has Bluetooth switched on, and is close to the battery monitor (within 10m) without any obstructions.