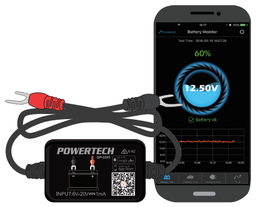
POWERTECH



Bluetooth 12V Battery Monitor
QP-2265
User Manual

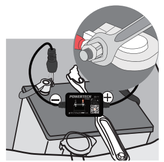
This product is designed to monitor battery, cranking system, charging system, record trips of a vehicle. It can be used also to monitor parameter of a stand alone 12V house battery.
After connecting to battery, device needs to be connected to mobile (phone, tablet etc.) via mobile App.
App will alert user to the voltage of battery and fault conditions when the mobile device is within Bluetooth 4.0 (10meters) range.
It also monitors duration of engine run time to be able to monitor multiple trip durations.

1. Product Specifications

Average Current	1mA	Short-circuit Protection	Built in
Input Voltage	6~20V	Reverse Connection Protection	Built in
Operating Temperature	-40°C ~90°C	Bluetooth	4.0
Physical Dimensions	55*35*16mm	Bluetooth Name	Battery Monitor
Voltage Accuracy (9-16V)	±0.03V	App Name	BM2

2. Product Safety Specifications

Product housing and cable material are designed to withstand high temperature conditions, up to 90°C . Suitable in most situations.
It also features built in short circuit protection and reverse polarity protection which will protect vehicle and unit in case of current sure or reverse polarity.



3. Installation

Note: Be careful not to disconnect car battery leads from battery while installation, you chance to lose vehicle memory settings.

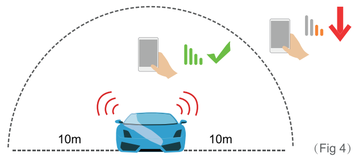
1. Connect red connector to Positive (+) battery terminal and black to Negative (-) battery terminal.
2. Mount monitor on battery with supplied hook and loop tape. Clean surface of battery and unit prior to installing. We recommend to install the unit on top of battery for better line of sight for wireless connectivity.

4. App Installation

(Fig 2)

(Fig 3)

1. Scan the QR code on the product, this would direct you to App Store or Google Play, download and install App. (Fig.2).
2. Search BM2 on App Store or Google Play. Download and install App. (Fig.3).



(Fig 4)

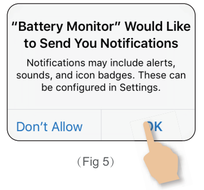
5. Bluetooth Range

Without any interference mobile device can communicate with monitor up to a distance of 10 metres. With interference and obstacles range reduces.

6. App Operation

1. Stand in close proximity of battery monitor and open all on mobile device.

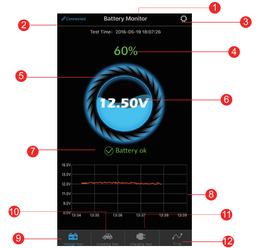
2. Allow app to access location even when not in use. if disallowed, device will not be able to send notification to mobile device (Fig.6).



(Fig 5)

(Fig 6)

3. Allow app to receive notifications. Notifications include alerts on car battery, cranking system, charging system and problem alerts. Once turned ON mobile device will receive notifications once in Bluetooth range irrespective of app running or not (Fig.5).



(Fig 7)

6.1. App Interface Instruction - First Interface.

1. This is the device name, can be changed to your preference under Device Management in system set up menu.

2. Displays connection status, BLUE indicated connected, RED indicates disconnected.

3. System Setup icon, touch to enter System Setup.

4. Shows state of charge of battery as percentage, 100% is fully charged.

5. Is the charge status ring, this is a graphical representation of battery state of charge, will change as state changes.

6. Actual voltage of the battery, for reference battery is considered full over 12.7v, ok between 12.7v and 12.4v and need to change below 12.4v.

7. Quick status indicator, Blue (OK), Orange (Charging), Red (LOW).

8. Battery voltage graph. Touch this graph to access Voltage History graph for last 24 hours and previous days.

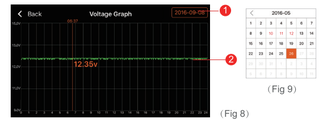
9. Battery voltage test icon. This is the default screen and will be first displayed when app is opened.

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. Selecting this button will display recent trip activity.

6.2. App Interface Introduction - Voltage History Graph



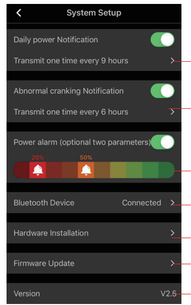
(Fig 9)

(Fig 8)

1. Date Select: Press this to display calendar. Select a particular date to see voltage recorded over that 24 hour period . Dates displayed in Red have voltage abnormalities (under 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.

6.3. App Interface Introduction - System Setup



1. Change slider on to receive notification of battery condition (when in range). Default is 1 notification each 6 hours (when in range). Can change to user requirements.

2. Change slider on to receive notification of cranking system (when in range). Default is 1 notification each 6 hours (when in range). Can change to user requirements.

3. Power Alarm: Change slider on to receive notification. Option of selecting a couple of trigger points. When battery reaches those points user will receive notification (when in range).

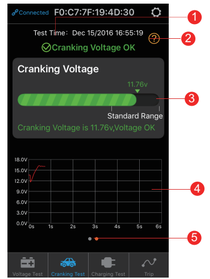
4. Bluetooth Device Setup: Displays current connection status. Press this to enter system setup. This is where nearby devices can be found, review other connected devices, switch between multiple devices connected to different batteries. Battery monitor can be renamed as well.

5. Hardware Installation: Instructions for device installation are present here.

6. Firmware Upgrade: Software of Battery monitor will be upgraded at times for better user experience and additional features. Stay up to date with firmware upgrades.

7. Version: Displays the current app version number.

6.4. App Interface Introduction - Cranking Test



1. Test time and date.

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, possibly aging of battery, low power, or starter fault etc. Seek further advice from an auto electrician or mechanic.

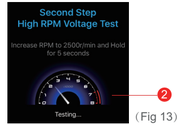
3. Display the cranking voltage values, green bar indicates good voltage, red bar indicates problem.

4. Cranking voltage graph. Displays cranking voltage over time taken to start engine.

5. Historic results. Swipe sideways to view previous test results (max. 2 tests). Orange dot indicates page you are viewing.

6.5. App Interface Introduction - Charging Test

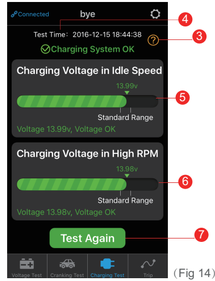
(Fig 12)



(Fig 13)

1. Select to start test, will display idle state voltage. Display will switch to next step Fig.13

2. High RPM Voltage Test, increase RPM as suggested below and hold reading for 3~5 seconds. Test is complete.
   4cyl - 2500/min
   6cyl - 2000/min
   8cyl - 1600/min



(Fig 14)

3. Description of charging voltage Test:

3.1. Charging Voltage normal
Charging system shows the alternator output normal, no problem detected.

3.2. Charging Voltage Low
Charging voltage is low. Check if engine transmission belt has slipped or disconnected, 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 rule out alternator failure.

3.3. Charging Voltage: High
The alternator output voltage is too high. Since most automotive engines use built-in regulator, need to replace alternator assembly (Old vehicles use external regulator, please replace regulator directly). Common voltage limits for automotive regulator is 14.7±0.5V. High charging voltage will overcharge the battery and shorten its life, also can make it malfunction.

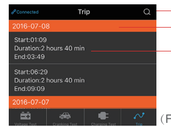
3.4. No Voltage Output: No engine voltage output is detected
Check whether the alternator cable and the alternator belt are working properly. (See Fig 14).

4. Charging test finished 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.



(Fig 15)

7. App Interface Introduction - Trip Record

1. Click search icon to review driving records via selecting date.

2. Date bar, separates dates between trips.

3. Start time, trip duration and finish time.

8. Caution and Warning

1. Product should not be exposed to over 20V else the monitor can get damaged.
2. App requires smart devices. Earliest compatible versions are Android 4.3 and iPhone 4S.
3. Smart device/ phone will only receive notification when in Bluetooth range of 10m.
4. During initial set up, if the user does not allow the mobile device to access location data, mobile device will not receive notifications.
   This can be changed by entering 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 app is updated or upgraded, all historic data will be retained. If app is deleted from mobile device, all historic data will be lost.
8. The device can monitor and store up to 35 days of data without syncing to mobile device. If the mobile device does not come in the vicinity of the monitor within 35 days all previous data will be erased making space for new data.
9. On set up, when mobile device is searching for monitor make sure that phones Bluetooth is switched ON and is in close proximity to the monitor.

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