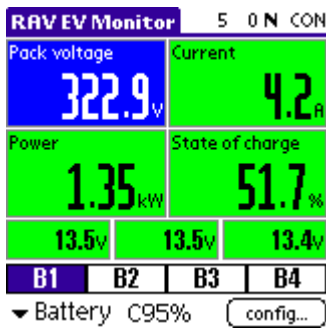


# RAV4 EV Monitor

## User Guide



### Introduction

RAV4 EV Monitor is a software program for collecting information from RAV4 electric cars produced between 1998 to 2003. It is not compatible with any other vehicle.

The software runs on palm handheld hardware and requires interface cable that connects the palm to the car's OBD port. It is recommended that the software is run on a palm m505 or m515 device, with background light switched off or set on low. Both m505 and m515 feature reflective color screen which is very visible in most orientations.

### Installation

There are 3 major ways of installing the software – hotsync, sd card, beaming.

#### Hotsync

Installation of the software is done via “Palm Desktop” “HotSync Manager” application, downloadable from [www.palm.com](http://www.palm.com)

(<http://kb.palm.com/SRVS/NUA/launchTab.asp?t=home&fn=m-series&mn=m515&cn=unlocked>) .

Once the Palm Desktop applications are installed, a double click on the RAV4EVMonitor.rpc file will schedule the software for installation with the next synchronization.

Please note that the synchronization between pc and palm is started via the palm device – tap on the “home” and then on the “HotSync” icon.

If you experience any problems with the synchronization please see here for an excellent step by step trouble shooting:

[http://kb.palm.com/wps/portal/kb/common/article/2630\\_en.html](http://kb.palm.com/wps/portal/kb/common/article/2630_en.html)


#### SD Card

Installation and running of the software is possible via SD card. Put an empty SD card in your computer and create a folder named “PALM”. Then move to the newly created “PALM” folder and in it create a subfolder named “launcher”. After that copy the prc file to the “launcher” folder on the SD card. Eject the SD card from your pc and insert it in the slot on the palm handheld. The palm should open up with the icon of the program.

## IR Beaming

Many laptops have IR beaming capability – just point the palm handheld (while it is on) with its top to the IR port of the computer. In Windows XP a small popup will show up and offer to exchange files. Select the .prc file and beam it to the palm device.

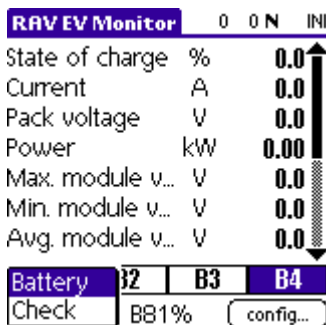
## After installation

After installation the “RAV4 EV Monitor” program the tap on the icon (  ) of the program to start it. Note that in most cases it would be necessary to scroll down to make the “RAV4 EV Monitor” icon visible.

Once the “RAV4 EV Monitor” program is installed, it could be associated with one of the hardware buttons on the device. To do that, tap on “Preferences” icon and then choose “buttons” (from the top right corner), click next to the button icon for the button you would like to use to start the program and choose “RAV4 EV Monitor” from the list.

## Interface and functions

Once started the “RAV4 EV Monitor” automatically attempts to connect using the last communication mode. Currently there are two communication modes available - the Battery and the Check. The Battery communication mode allows monitoring of a limited number of parameters. It pays off with a much faster refresh rate of parameter values compared to the Check mode. The Check mode allows for monitoring all individual module voltages and internal resistances.



Parameter	Unit	Value
State of charge	%	0.0
Current	A	0.0
Pack voltage	V	0.0
Power	kW	0.00
Max. module v...	V	0.0
Min. module v...	V	0.0
Avg. module v...	V	0.0

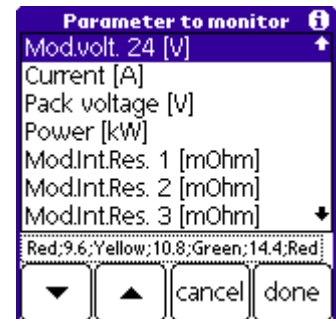
Battery | B2 | B3 | B4  
Check | 881% | config...

### General

While the interface allows for monitoring only 7 parameters at one time, all parameters for the currently selected communication mode are logged. The frequency of the logging (time between each log row) can be adjusted via the configuration button.

The main screen of the program contains 4 large and 3 smaller parameter view boxes, each of them displays one parameter. For parameters that have color settings, the view boxes change background color depending on the value of the parameter.

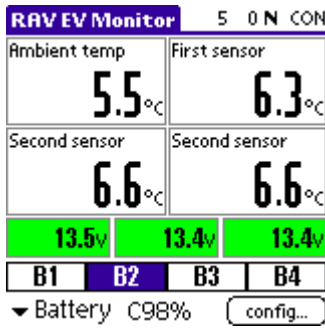
To change the parameter displayed in a particular view box, just tap on the view box and a list with possible parameters will be displayed. Tap on the desired parameter and select the “done” button. The 4 large parameter view boxes display parameter name and unit, while the small ones do not display the parameter name. Any of the parameter view boxes can display any parameter for the currently selected ECU.



## Status bar

On the top of the screen there is a status bar – it displays current status and log status. If the application

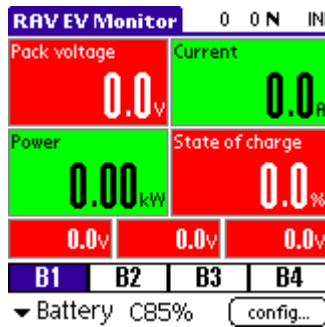
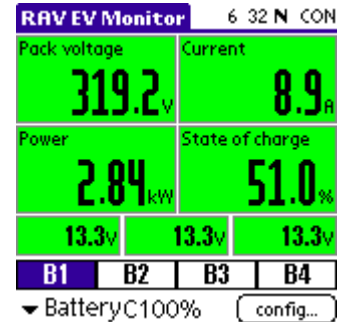
currently logs data the letter “L” is displayed. If the application for some reason is not logging data then the letter “N” is displayed. The log settings can be changed via the configuration button.



“INI” is displayed if the device has not established connection with the car. It can take up to 60 seconds for the device to establish connection. For a connection to be established the car computers need to be “On” - either started with when the car is started with a key or when charging.

The current communication mode can be changed via the control on the lower left corner – tap on the control and select different communication mode.

For each communication mode there are four screens with 7 parameter view boxes each. The screens are changed by taping on one of the “B1”, “B2”, etc buttons. The letter in the buttons changes to reflect the selected communication mode.



## Logging

All monitored parameters can be saved on a storage card. The log location can be changed via the configuration dialog. Logs save all parameter data in a semicolon delimited format, the names of the logs are in the following format: “<communication mode name>\_yyyymmdd.log”, where yyyymmdd is the current date.

Example of name “Battery\_20090418.csv” contains logged data from BMS from 18<sup>th</sup> of April 2009.

The palm device is compatible with normal SD cards (do not use SD-HC cards) and cards with size of maximum 1GB.

There is no need to insert the card and then start program. The program will recognize the card whenever inserted and will start logging immediately if the option “log if card is present” is checked. All logs are saved to the root folder of the SD card.

## Configuration

All program configuration settings are remembered between program restarts.

All display configuration (monitored parameters and current screens) are also remembered between program restarts.

The palm device is maintained in “on” state as long as there is information coming from the car. When such information stops coming (when the car is switch off, or the device is disconnected) the device will switch off depending on the timeout settings.



## ***How-to's for Palm***

### **Hard reset palm device**

1. Press and hold the Power (on/off) button on the front panel of your device.
2. While holding Power, use an unfolded paper clip, or the reset tool at the tip of your stylus. Gently press and release the RESET button inside the hole on the back panel of your device (where's the reset hole?).
3. If you see a progress bar (see below), keep holding the Power button.
4. Next, the Palm Powered screen will appear. Release the Power button when you see it.
5. You'll see a screen that asks: Erase all data? YES = "up" button NO = any other button. Press UP on your 5-way navigator to complete the hard reset

### **Soft reset palm device**

1. Use an unfolded paper clip, or the reset tool at the tip of your stylus.
2. Gently press and release the RESET button inside the hole on the back panel of your device.
3. After a soft reset, a logo screen appears, followed shortly by a Preferences screen asking you to set time and date.
4. All data on your device should be retained.

### **Background light**

Switching on/off of the background light of a palm device is done via pressing and holding the "ON" button – the semi transparent button on the top edge, next to the right top corner of the device.

The m515 has a possibility to adjust background light – tap on the upper right hand corner, to the left of the calculator shortcut. A prompt to select screen brightness will popup.

Palm's operating system does not allow for real multitasking, and it is recommended that the palm device used for monitoring is used only for that.

More information about palm devices can be found at <http://kb.palm.com/>