

# **USER GUIDE**

## **OBD CAR DOCTOR ANDROID**



# OVERVIEW

## Look Under the HOOD!

OBD II Compliant car



OBD scan tool hardware





OBD Car Doctor  
at your mobile device



## Use Smartphone for Quick View of the Car and Engine Main Parameters:

- ✓ Read real-time parameters: speed, rotation, timings, economy
- ✓ Read diagnostic trouble codes
- ✓ Clean trouble codes (turn off Check Engine, MIL)
- ✓ Analyze Fuel rate

## OBD Car Doctor and OBD Car Doctor PRO:

Supported parameters	<b>OBD Car Doctor</b> Android 	<b>OBD Car Doctor PRO</b> Android 
Read and interpret trouble codes (DTC memory)	✓	✓
Clear error codes including Check Engine Light (MIL) and others	✓	✓
Read parameters in real-time (if supported by the car):	✓	✓
Engine RPM	✓	✓
Motor load	✓	✓
Coolant temperature	✓	✓
Fuel System Status	✓	✓
Speed of Vehicle	✓	✓
Absolute air pressure	✓	✓
Ignition timing	✓	✓
Inlet air temperature	✓	✓
Mass air flow	✓	✓
Throttle position	✓	✓
Lambda Sensor (correction of the motor)	✓	✓
Fuel pressure	✓	✓
And another parameters - depending on the car	✓	✓
Chart drawing for real-time data	✓	✓
Reading VIN chassis number	✓	✓
Real time parameters recording		✓
Read, display, record multiple parameters simultaneously		✓
Recording parameters in background mode		✓
View and sending recorded parameters traces		✓
GPS support		✓

# CONTENTS

## 1. Starting usage - Requirements

- Car
- OBD scan tool hardware
- Mobile device

## 2. OBD II Bluetooth hardware

## 3. Starting using OBD Car Doctor application

- OBD Car Doctor launching and configuration

## 4. OBD Car Doctor main options

### 4.1. Menu > Configuration

OBD Car Doctor Configuration

### 4.2. General information

### 4.3. Current information

### 4.4. Diagnostic trouble codes

### 4.5. OBD records

OBD Car Doctor PRO – additional options

### 4.6. Command combinations

### 4.7. Recording OBD commands

### 4.8. OBD records

## 5. Questions

1. Does my car support OBD-II standard?
2. Diagnostic connector. What is this? How to find diagnostic connector in the car?
3. What is DTC?
4. How do I connect my mobile device and Application to my car?
5. Fail to set the Bluetooth connection with the adapter?
6. I've got Bluetooth connection but ECU is not defined, what have I do?
7. Does OBD Car Doctor work with my phone or tablet?
8. Are there any tips to get the accurate data?
9. What is the principle of the application?
10. What parameters I will see using the OBD car Doctor?
11. How do I upgrade to the OBD car Doctor Pro-version?
12. What do the data "Economy fuel", "Economy fuel avg", "Economy distance", "Economy distance avg" ?
13. OBD Car Doctor Pro does not show the "Economy fuel", "Economy fuel avg", "Economy distance", "Economy distance avg"?
14. Why is the maximum value of RPM during OBD recording does not correspond to the maximum value at the chart? (Same issue with the RPM data logging)
15. What is the "Volumetric efficiency"? How to define Volumetric efficiency for my engine?
16. Can you explain the "Timeout" option in the Settings menu? In what units it should be input?
17. How can I register at InCarDoc service using my mobile device?
18. How can I upload data to the server?

## 6. Alarm situations



# Requirements

## Car

American cars since 1996,  
European since 2001,  
diesel - 2004.

VEHICLE EMISSION CONTROL INFORMATION		
<b>A</b>  motor co, inc.	ENGINE FAMILY DISPLACEMENT	EFN2.8YBT2BA 2.8L
	OBD II CERTIFIED	
THIS VEHICLE CONFORMS TO U.S. EPA AND STATE OF CALIFORNIA REGULATIONS APPLICABLE TO 1997 MODEL YEAR NEW TLEV PASSENGER CARS.		
REFER TO SERVICE MANUAL FOR ADDITIONAL INFORMATION TUNE-UP CONDITIONS: NORMAL OPERATING ENGINE TEMPERATURE, ACCESSORIES OFF, COOLING FAN OFF, TRANSMISSION IN NEUTRAL.		
EXHAUST EMISSIONS STANDARDS CERTIFICATION IN-USE	STANDARD CATEGORY TLEV TLEV INTERMEDIATE	
SPARK PLUG TYPE NGK BPRE-11 GAP: 1.1mm	CATALYST	EFN2.8YBT2BA 



## OBD scan tool hardware

Android application requires **OBD-II Bluetooth adapter** based on **ELM 327** or compatible one.

## Mobile device

**OBD Car Doctor** and **OBD Car Doctor PRO** is available for all **Android** devices (**Android 2.2** or newer).

You also need to have **Bluetooth** in your phone.



# OBD II Bluetooth Hardware



Please, note that OBD Car Doctor Android supports all ELM327 based **Bluetooth** hardware interfaces including but not limited to:

- OBDII
- OBD pros
- CHX
- CBT
- Vgate
- OBD2ECU
- ScanTool.net OBD Scan (including OBDLink scanner and other adapters STN11XX)
- PLX Devices Kiwi Bluetooth
- Diamex DX70 & DXM
- Any other ELM327

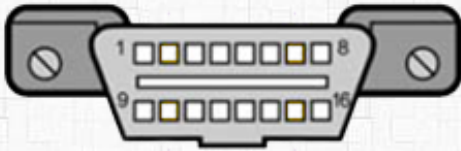


The easiest way to get the adapter is to search internet using keywords **ELM327 Bluetooth** and choose the best option for you.





# Starting Using OBD Car Doctor Application



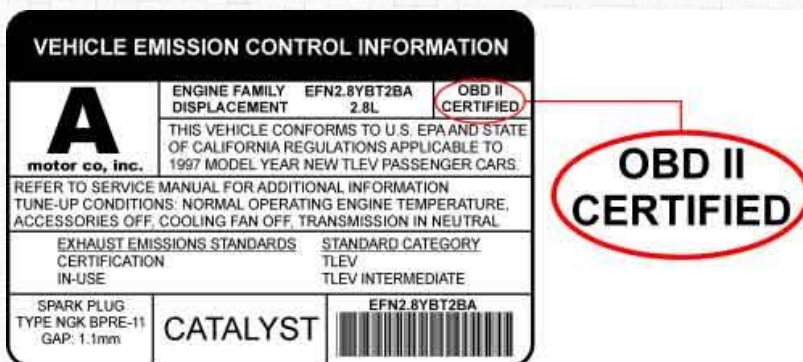
Before starting usage the application make sure that your car supports OBD-II standard.

To learn whether your car supports OBD-II standard, you may examine the 16 pin-out DLC - Diagnostic Link Connector of a trapezoidal shape.

All OBD-II cars have a connector located in the passenger compartment easily accessible from the driver's seat. Check under the dashboard or behind or near the ashtray. All cars built since January 1, 1996 have OBD-II systems.

\* Some cars have OBD-II system but they do not support OBD-II protocol, like Opel Vectra 1996–1997. In such cases it is necessary to use a scanner, designed to work with the factory protocols of that particular brand of the car - for example, this applies to Opel Vectra B 1996-1997 of the European market. You will need to determine specific OBD-II protocol that is used.

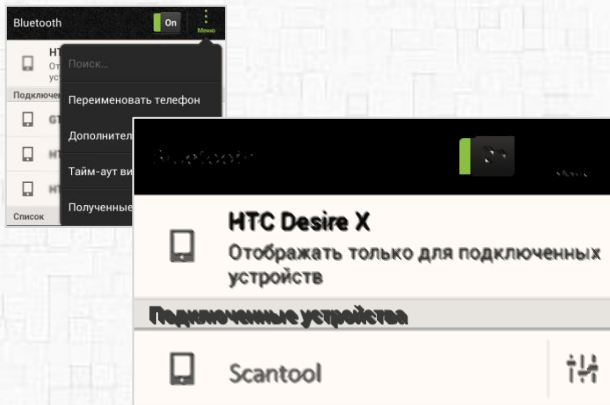
It is also useful to see all the identification plate on the car - there may be signs "OBD-II compliant" (supports OBD-II), or "OBD-II certified" .



Another way to find out if your vehicle is supported -- read technical documentation of your vehicle (but not in the general direction to the car brand / model!). You may also internet search using keywords – your car brand / model.

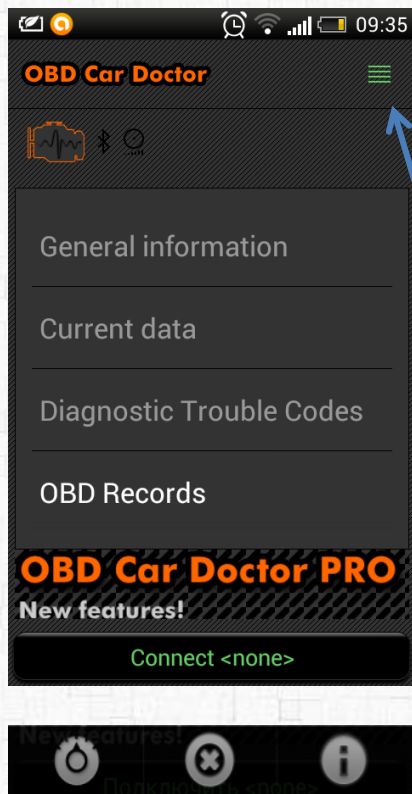
# OBD Car Doctor

## Launching and Configuration




1. Plug the Bluetooth adapter into pinout port (the DLC - Diagnostic Link Connector).
2. Make sure that the light at the adapter flashes green (because of the uncomfortable position of DLC connector, to insure that the light flashes green one may use a mirror or front camera at your smartphone).
3. Start the engine
4. Go to the Settings > Bluetooth environment at you Android mobile and search the adapter (it should appear like 'scantool','obdkey','plx ...','cbt' ). Choose the adapter. It will suggest to pair the devices.
5. Pair the two devices. The secret code of pairing is 1234 or 0000. Go to the OBD Car Doctor application > Settings, select name of the adapter from the devices list and you are ready to go!
6. Download the OBD Car Doctor app to your smartphone. You may use the button <<
7. Ready!

# OBd Car Doctor Main Options



After you've set up the adapter and configured the app you may start using it.

Click the button  at your smartphone, you'll see the main screen of the OBd Car Doctor App.

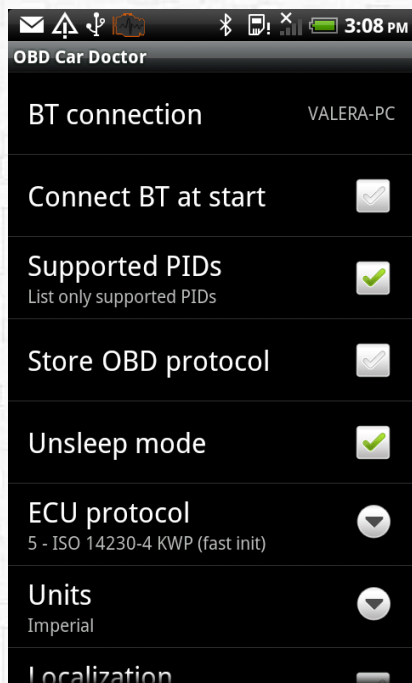
Here the following options are available:

«**General information**»

«**Dynamic parameters**»

«**Diagnostic trouble codes**»

«**OBD records**»



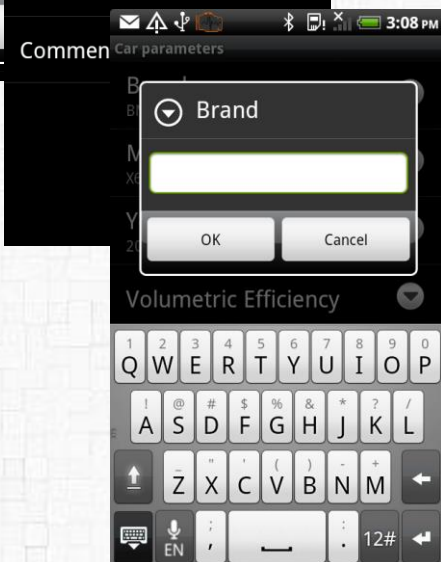
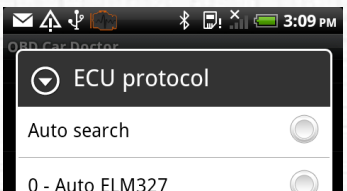
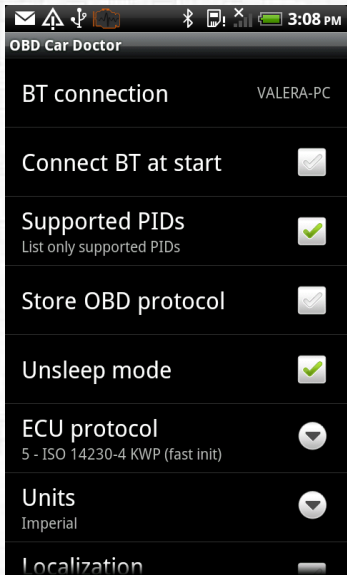
## 4.1. Menu > Configuration

Menu button in the upper right corner of the main screen calls the **Configuration**, where one can configure the application .

\* For a quick start it is enough to configure **BT connection** - choose paired adapter (page 7, paragraph 4.5), and leave the other settings as default.



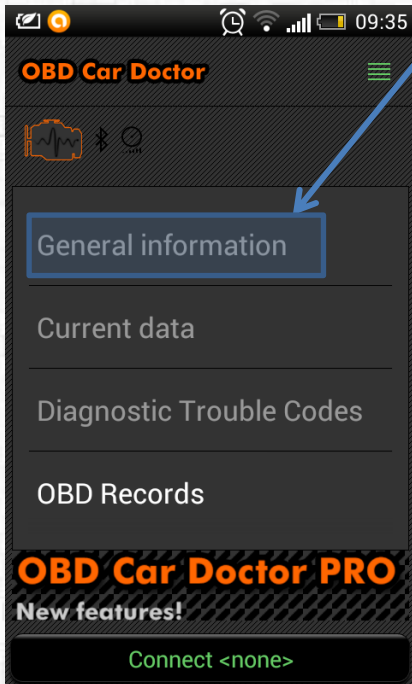
# OBd Car Doctor Configuration



For more accurate tuning in Settings you can change:

- **BT connection** – choose Bluetooth device and connect to it
- **BT mode** – auto, secure, insecure, etc.
- **Connect BT at start** - Bluetooth connection automatically when you start the program;
- **Auto shut-off BT** – shut-off Bluetooth with the app shut-off
- **Auto start of the last command** – starting last active command after Bluetooth connection
- **Force BT reconnect** –
- **ECU protocol** - it is recommended to set Auto, but if you know the ECU protocol of your car, you can choose from the list;
- **Store OBD protocol** - the last protocol, which has been successfully connected to (fast connection);
- **Supported PIDs** – the only supported OBD II parameters are shown, or the entire list of standard OBD parameters;
- **Unsleap mode** – blocking sleep mode at the dynamic data page;
- **Units** - Imperial(miles / hour) or Metric (km / h);
- **UK gallon** – using British gallons (instead of liters and American);
- **Localization** - use the English terms of command names or translated into the appropriate language;
- **E-mail** - to send the stored items by e-mail;
- **Car parameters** – one can input car info, like **Brand**, **Model**, **Year**, **Volumetric efficiency**, **Displacement** (sm3);
- **Timeout** – interval between the data polling **Logging** - recording application performance for the developers to send (it is recommended to put a tick, for quick solving of the potential problems).
- **Logging** – recording of the app performance to send developers (recommend to put a tick and send in case of any problem);
- **Test** – console mode for manual OBD-II command inputting and adapter set up (use Test > Console to allow console mode).

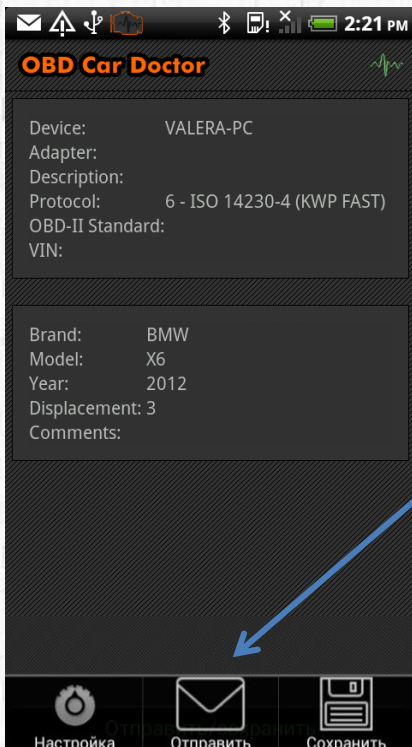
# General Information



4.2. «General Information» option allows you to review the general information about the devices :

- Devices – adapter name
- Adapter – adapter type and version
- Protocol – ECU of the car
- OBD II standard
- VIN (Vehicle Identification Number) – is displayed at tick set **Supported PIDs** see page 9, 4.1.)

Here you can see also your car parameters that you've filled at the **Settings** menu (see page 9, 4.1.).



- Brand
- Model
- Year
- Displacement
- Comments

Also, you can send this data to help us improve the application by clicking Send OBD II on e-mail.

Clicking the button **Save** you are saving **General information** to review it in **OBD records**.



# Dynamic Parameters

**4.3. «Dynamic Parameters»** option displays the list of dynamic data read from the car engine.

While clicking the command name one will see the detailed information with its real time value and a visual graph (where supported).

Keep in mind that not every vehicles control unit supports all of the functions and not every OBD-II diagnostic scanner can use all of these modes:

- PID 03 Fuel system status. At the value "Closed Loop" the system works in the feedback mode at that time the data from Oxygen Sensor are used for correction of the fuel supply. At the value "Open Loop" the data from Oxygen Sensor are NOT used for correction of the fuel supply;

- PID 04 Calculated Load;
- PID 05 Coolant temperature;
- PID 06/08 Short Term Fuel Trim Bank 1/2;
- PID 07/09 Long Term Fuel Trim Bank 1/2;
- PID 0A Fuel pressure;
- PID 0B Manifold pressure;
- PID 0C Engine speed - RPM;
- PID 0D Vehicle speed;
- PID 0E Ignition Timing Advance;
- PID 0F Intake Air Temperature;
- PID 10 Air Flow;
- PID 11 Throttle position;
- PID 12 Secondary Air Status;
- PID 12 Location of O2 sensors;
- PID 13-1B O2 Sensor 1/2/3/4 Bank 1/2 Volts.

- Getting saved status of the current parameters of the control system at the time of the fault codes occurrence (Mode 2 Freeze Frame).

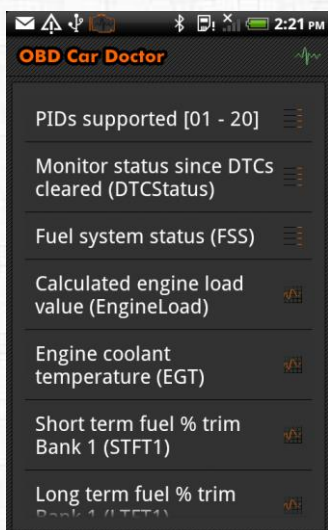
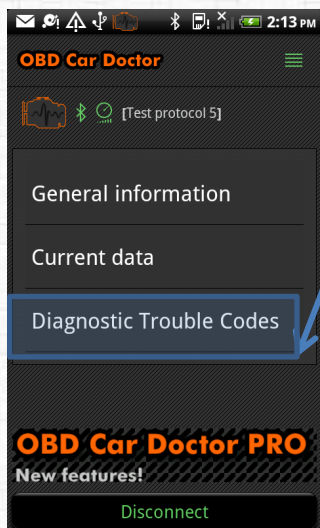
- Mode 3 Read Diagnostic Trouble Codes (DTCs).

- Mode 4 Reset DTC's and Freeze Frame data – clear error codes, status of the current parameters, Oxygen sensor tests results, test monitors data.

- Mode 9 Request vehicle information - VIN-code and calibration data.

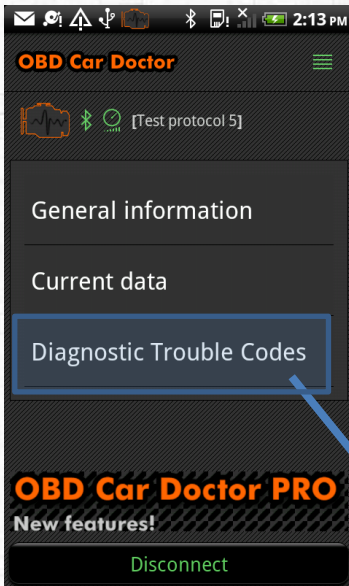
- Fuel Economy parameters now supported as beta version feature, please note that for correct calculation you may need to enter proper Engine displacement (in cubic cm) and volumetric efficiency (in %, the default is 80)

*Diesel engines are not fully supported now, please contact developers if want to participate in Diesel values testing.*





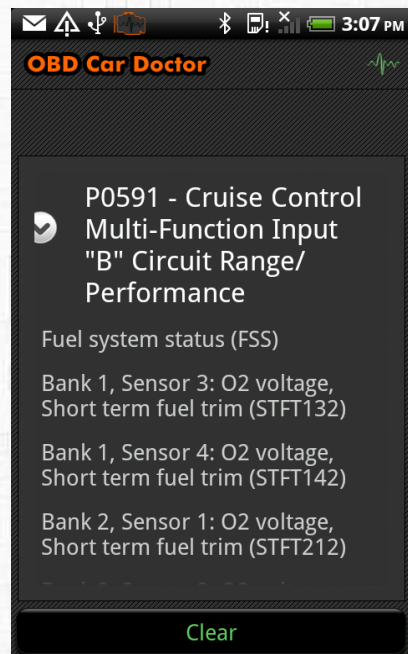
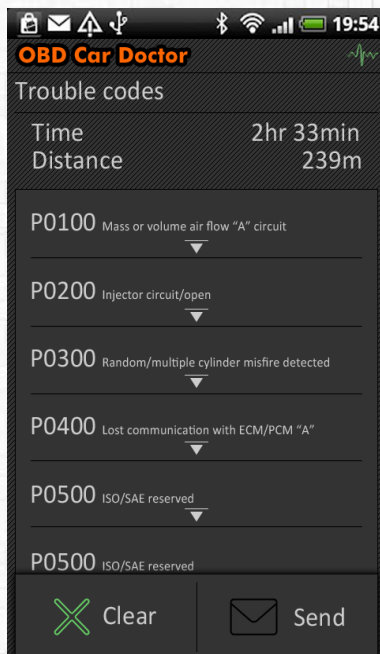
# Diagnostic trouble codes



## 4.4. «Diagnostic trouble codes» option

Displays and gives the possibility to clean the error codes, as well as review the saved parameters - **Freeze frame** - a snapshot of the parameter at the time of the error.

- Clicking **Clear** button, you are resetting current data of the diagnostic trouble codes.
- Clicking button **Send**, you can send error codes at e-mail.
- Clicking button **Save**, you can save error codes for further reviewing at the **OBD records**.



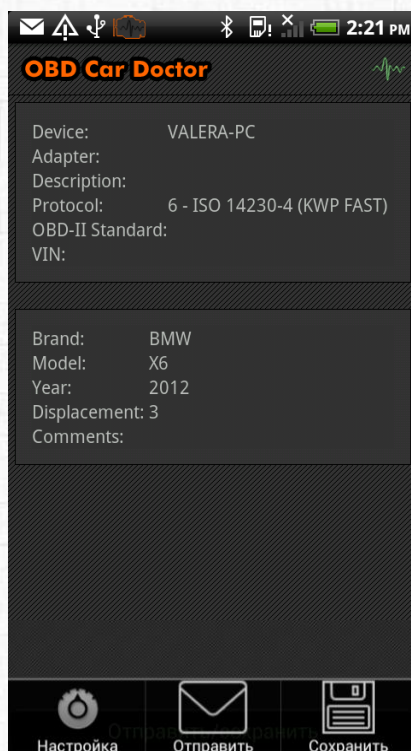
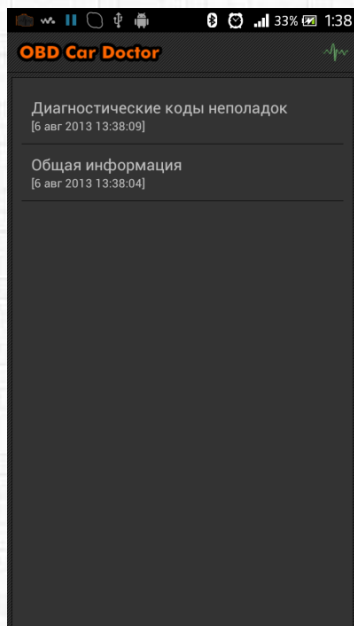
# OBD records

## 4.5. «OBD records» option of the OBD Car Doctor basic version

Allows to review stored records of the **General information** and **Diagnostic trouble codes** options.

### To record OBD information

You need to call Android standard menu, you'll see **Send**, **Save** and **Clear**.



# OBD Car Doctor PRO

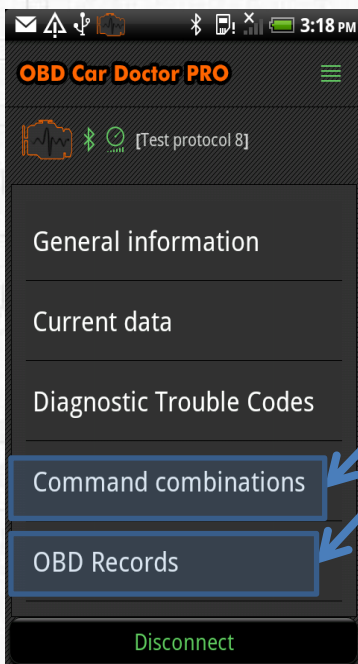


If you are using a OBD Car Doctor standard version and want to take advantage of additional features of the enhanced version of the application, you can install on your smartphone **OBD Car Doctor PRO**.

To upgrade to pro-version you can use the button in the main menu **OBD Car Doctor PRO NEW features!**

By pressing this button, you will be prompted to download the paid version **OBD Car Doctor for 2.99 USD**

You can also use the button



**OBD Car Doctor PRO** has additional features that are displayed in the comparative table on the **Introduction** page.

The standard options described in paragraphs 4.1. - 4.3. are enriched with the functions:

«**Command Combinations**»

«**OBD Records**» (extended functionality)



# OBd Car Doctor PRO

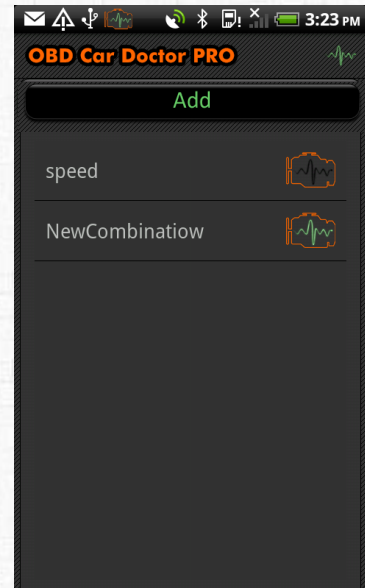
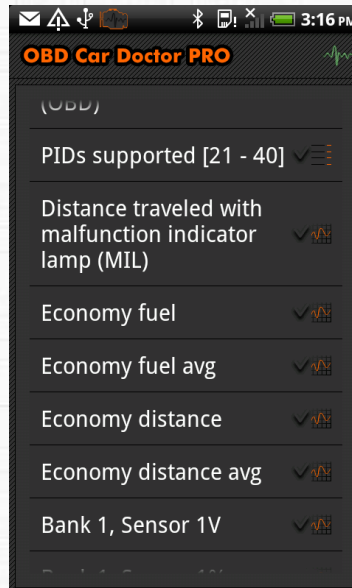
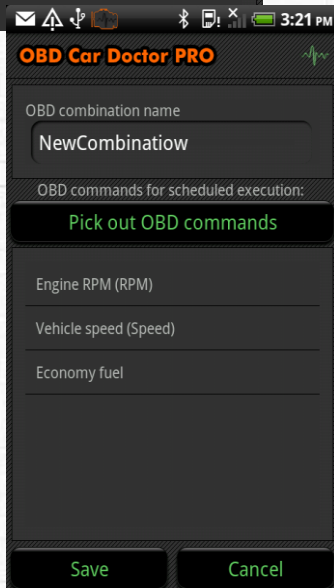
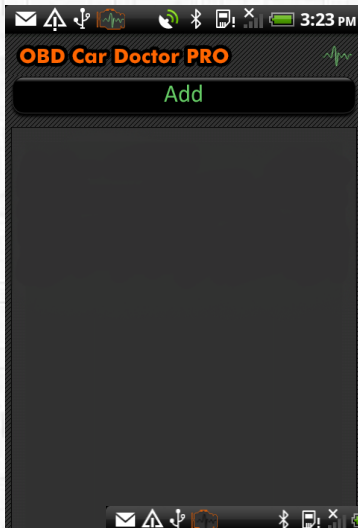
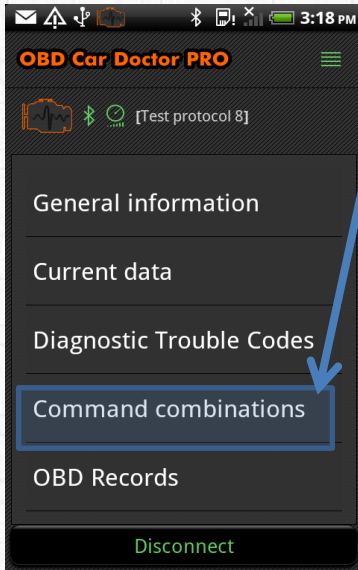
## 4.6. Command Combinations

**4.6. The "Command Combinations" option** allows you to create custom combinations using basic commands for further usage: review the data changes of the different commands in comparison, in the form of visual graph, list, etc.

\* For example, you are interested in the balance between the speed & engine rpm, you can add such combination for quick and easy review of its dynamics. To create a sequence of commands, click the "combination of teams" in the main screen. It will open a menu with button combinations "Add".

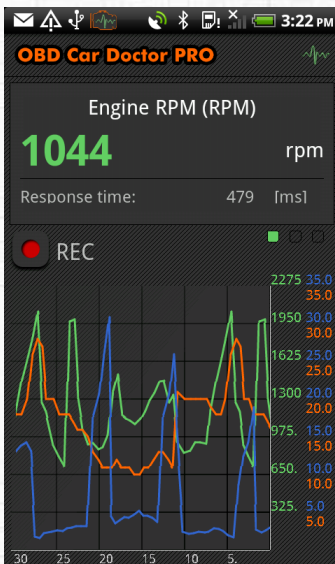
1. Click the Add button, you'll get a page to create a new combination.
  2. Enter the name of combination
  3. Click Pick out OBD commands
  4. Put a tick at the necessary command at the list and click Save
  5. Go back to the previous menu and click the Save button
- This screen also displays all the commands combinations that you have added.

\* For comparison, you can select an unlimited number of commands, but remember, the more commands selected for comparison, the longer and more complex request cycle and the graph. We recommend that you select no more than 3 commands.





# OBD Car Doctor PRO



## 4.7. Record of OBD commands





To review the saved records of OBD commands on the page **OBD Records**, you need first to record the command or a combination of commands.

To do this, at the command detailed info page - see **Dynamic Parameters > command details** or - page **Commands Combination > combination detailed view** press the button **REC**  which starts the recording mode. At the recording mode, at the standard Android control panel one can see the icon,  which can be used for quick call of the OBD Car Doctor app .

\* This option is available only in **OBD Car Doctor PRO**.

\* The Button  can also record data in the background mode. At the recording mode, at the standard Android control panel one can see the icon,  which can be used for quick call of the OBD Car Doctor app .

\* While record mode activated the green line is on at the icon  

\* At the page **Command Combinations > combination detailed view**, while pressing the parameter value (the green number) one can switch between the commands included into the combination.

\* **While pressing the graph** – graph zooms, one more click turns it back into normal size.



# OBD Car Doctor PRO

## 4.8. OBD Records

«**OBD Records**» options allows to review the stored data of the commands and command combinations changes.

From the main screen of the application, go to the «**OBD Records**» option.

You will see a list of commands and combinations of commands, with the details of each record (date, time).

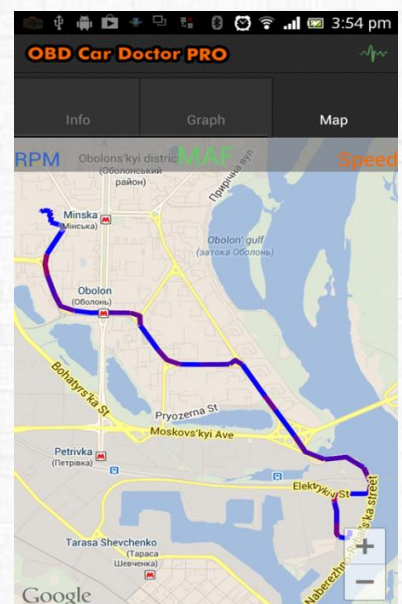
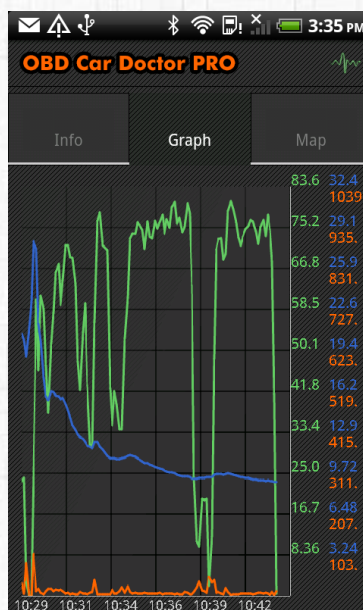
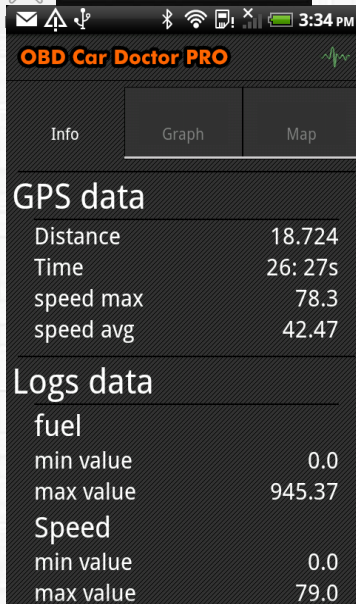
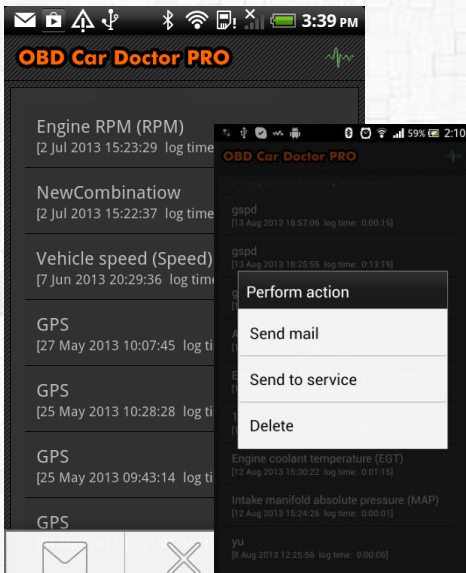
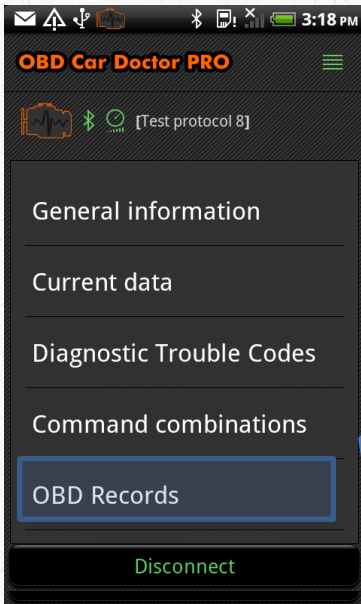
By clicking on the record, you'll see the page with the details of the recording, where you will see the tabs:

**Information** - GPS data, logging details, etc.

**Graph** - shows the changes of the parameters in the form of a graph, where each command has different colors.

**Map** – displays traffic route on the map, data overlay on the map.

Long click on item, calls out popup menu allowing you to Send date to e-mail and to InCarDoc server.





# Questions

## 1. Does my car support OBD-II standard?

Following factors designate that you car support OBD-II

- 16 pin-out DLC - Diagnostic Link Connector of a trapezoidal shape.
- All OBD-II cars have a connector located in the passenger compartment easily accessible from the driver's seat. Check under the dashboard or behind or near the ashtray. All cars built since January 1, 1996 have OBD-II systems.
- read technical documentation of your vehicle (but not in the general direction to the car brand / model!).
- identification plate on the car - there may be signs "OBD-II compliant" (supports OBD-II), or "OBD-II certified" .

See page 4, Requirements.

## 2. Diagnostic connector. What is this? How to find diagnostic connector in the car?

16-pin DLC – Diagnostic Link Connector, usually located in the center of the car. It should be within 16 inches of the steering wheel. The manufacturer can locate the DTL in one of the eight locations defined by EPA. Each pin of the connector has a different purpose. See also the question

See page 6, **Starting using OBD Car Doctor application.**

## 3. What is DTC?

OBD-II supports SAE J2012 standard which comprises the corresponding trouble codes - Diagnostic trouble codes (DTC's). The OBD-II codes has united format consisting of a Latin letter and 4 digits (sometimes letters instead).

These codes are used by some manufacturers to identify vehicle problems.

The codes are divided into two groups – generic and extended codes. Generic ones are strictly standardized and their decoding is always the same for all the OBD-II cars, but vehicle manufacturers also may use manufacturer specific DTC codes that are different from the Generic codes – extended codes. Foreign vehicles may also use DTC codes different from the generic DTC codes. It's important to remember that codes depend on the cars construction, model and manufacturer.

# Questions

## 4. How do I connect my mobile device and Application to my car?

### OBD Car Doctor Android

For Android app you need to buy OBD-II Bluetooth adapter based on the ELM 327 Comptroller or a compatible one. Please note that Android version of the OBD Car Doctor works with wireless adapters which supports Bluetooth only.

1. Plug ELM 327 Bluetooth adapter to the car's OBD-II port, go to the Bluetooth environment at you Android mobile and find the adapter.
2. Pair the two devices.
3. The secret code of pairing is 1234 or 0000.
4. Go to the OBD Car Doctor application > Settings, select name of the adapter from the devices list and you are ready to go!

See page 7, [Setting and configuration of OBD Car Doctor](#)

## 5. Fail to set the Bluetooth connection with the adapter?

1. Make sure that, OBD II adapter is plugged correctly, the engine is on and adapters lamp flashes.
2. Make sure that, OBD II adapter is among the list of paired Bluetooth devices, standard Android control panel.
3. Make sure that, it is OBD II adapter that you've chosen in the OBD Car Doctor app Settings (OBD Car Doctor > Menu > Settings > BT connection> OBD II adapter).

If everything mentioned is correct, but there is still no connection, try following:

1. Make sure that, other programs simultaneously doesn't keep OBD II adapter for its work.
2. Stop all the apps, go to the standard Android control panel > Applications > stop all apps keeping OBD II adapter
3. Go to Settings ones more > Bluetooth > off all the paired devices > off and on Bluetooth > search for the devices and pair with the OBD II adapter.

# Questions

## 6. I've got Bluetooth connection but ECU is not defined, what have I do?

It might be that your car doesn't support OBD II, in this case go to **OBD Car Doctor Settings** > Logging> after that press send and send us the log file. Basing on logging the results we will find the solution for you.

## 7. Does OBD Car Doctor work with my phone or tablet?

**OBD Car Doctor** and **OBD Car Doctor PRO** is available for all Android devices with version of Android 2.2 or newer. You also need to have Bluetooth in your phone.

## 8. Are there any tips to get the accurate data?

For the data accuracy, we recommend that you avoid simultaneous running multiple programs to read OBD. The driver should insure that there are no other active applications connected to the OBD.

## 9. What is the principle of the application?

Application reads dynamic and stored parameters of the ECU-compliant (engine control unit) in the vehicles that supports OBD-II standard. Multiple ECU data reading are also available.

## 10. What parameters I will see using the OBD car Doctor?

See page **Overview** - A comparative list of all supported parameters and features.

## 11. How do I upgrade to the OBD car Doctor Pro-version?

**OBD Car Doctor FREE**



**OBD Car Doctor PRO**

2,99 \$





# Questions

## 12. What do the data "Economy fuel", "Economy fuel avg", "Economy distance", "Economy distance avg" ?

- **Economy fuel** - instantaneous flow rate (for "single" current values) measured in km per 1 liter (or miles per gallon).
- **Economy fuel avg** - average consumption for the whole trip (up to current moment) is measured in km per 1 liter (or miles per gallon).
- **Economy distance** - instantaneous flow rate (for "single" current values) measured in liters per 100 km.
- **Economy distance avg** - the average consumption for the whole trip (up to current moment), measured in liters per 100 km (or gallons per 100 miles).

## 13. OBD Car Doctor Pro does not show the "Economy fuel", "Economy fuel avg", "Economy distance", "Economy distance avg"?

For the calculation of all types of fuel consumption **MAF or MAP** sensors should be available in the car (if only MAP sensor is available one should specify Engine Displacement in the **Settings** menu). The data indication may delay a little and start after car started moving (speed > 5 km/h, the distance > 50m).

## 14. Why is the maximum value of RPM during OBD recording does not correspond to the maximum value at the chart? (Same issue with the RPM data logging)

At the moment the log information on a smartphone is displayed in form of "preview", and as the zooming is not available only average number of points are displayed, that's why the "peaks" can be cut. For a detailed analysis of records the tracks upload to the server is expected. It will provide additional tool charts analyzing and processing. This functionality being tested at the moment.

## 15. What is the "Volumetric efficiency"? How to define Volumetric efficiency for my engine?

**Volumetric efficiency** is used in the program for calculation of the fuel economy based on manifold absolute pressure sensor (MAP) if the direct data of the mass air flow (MAF) is not available.

The default value is 80. If the car supports both MAP and MAF, then the "**Volumetric efficiency**" can be viewed as a measurement parameter (will be displayed in the list of Dynamic Parameters).

Read more about the [Volumetric efficiency](#).

## 16. Can you explain the "Timeout" option in the Settings menu? In what units it should be input?

The **Timeout** value means the interval between polling the data. It works as "not less than". By default, these data are read when ready, if you do not need to read the data very often this value can be increased. It makes sense to put only the values exceeding the "response time" that is displayed while reading.

# Questions

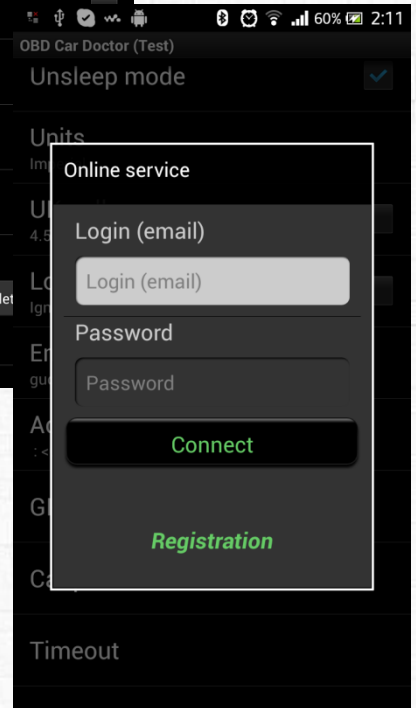
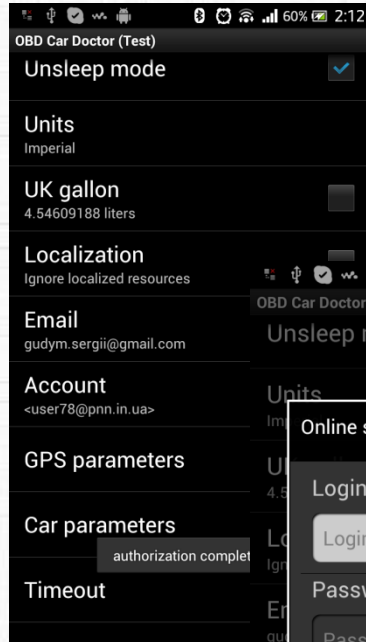
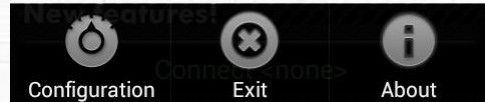
## 17. How can I register at InCarDoc service using my mobile device?

To create an account at the web server do following:

At the mobile app OBD Car Doctor PRO **Menu > Configuration > Account**, input **Login** and **Password** for your account and click **Register**.

*You need to create account for sending OBD Records to the server **InCarDoc** and see detailed information about your car performance at your Personal account.*

Also, you can register here at the website **InCarDoc** use this link > [incardoc.com](http://incardoc.com), go Personal account > Registration, fill in the fields and click Register.

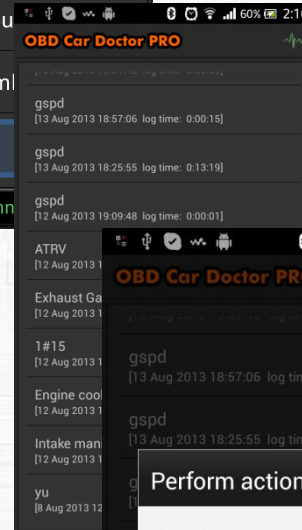
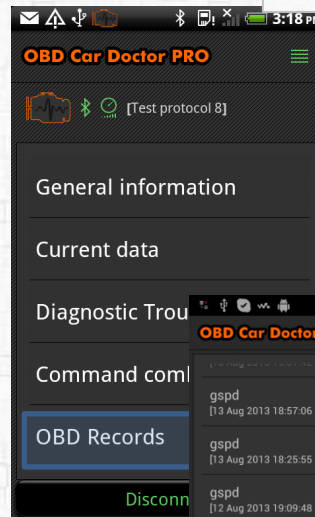
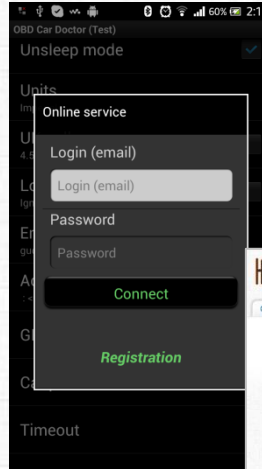


# Questions

## 18. How can I upload data to the server?

For files uploading do the following when your mobile device is connected to the Internet:

- create account with **Registration** option in the application (Menu > Configuration > Account) or with website option [incardoc.com](http://incardoc.com) > Registration
- set your **Login** and **Password** in Account (Menu > Configuration > Account)
- upload your traces to server: open list of recorded traces at OBD Records page, long click on item, select "Send to service" in popup menu
- visit [incardoc.com](http://incardoc.com) and login at **Personal account** page to view the traces.



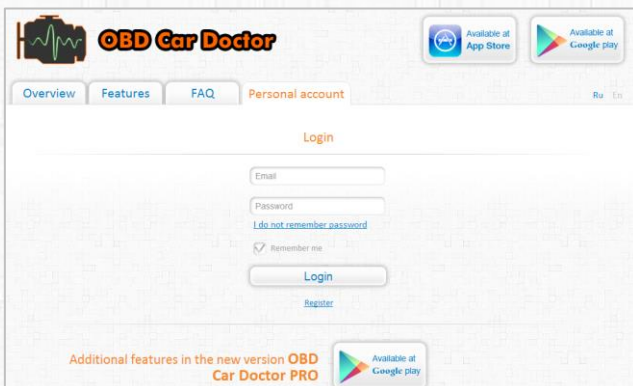
### Perform action

- Send mail
- Send to service
- Delete

Engine coolant temperature (EGT)  
[12 Aug 2013 15:30:22 log time: 0:01:15]

Intake manifold absolute pressure (MAP)  
[12 Aug 2013 15:24:26 log time: 0:00:01]

yu  
[8 Aug 2013 12:25:56 log time: 0:00:06]





## Alarm situations



In case of appearing mistakes during the work with **OBD Car Doctor** which are not described in this user's guide, you should contact the staff of PNN, of technical support department.

e-mail: [support@incardoc.com](mailto:support@incardoc.com)

tel. +38 044 239 98 97