Dear customer,

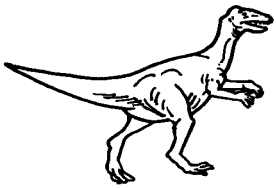
we would like to thank you for purchasing our product. The Troodon diagnostic device will allow you to find and identify faults of electronic systems on the majority of today´s vehicles.

Because the complexity of control systems is increasing with every new generation, a diagnostic device is becoming a necessity for anyone who wants to repair vehicles efficiently and with high quality. We highly recommend reading the user guide in detail, as it will help you understand how the device is operated.

A complete description of all diagnostic features of the Troodon device can be found in this guide. Every function is described in detail and mostly documented with figures. Connecting the Troodon to a PC is also described.

Would you have more questions regarding the operation of the device please contact your reseller, who will be happy to help you. We also welcome your suggestions of future improvements of our products.

Published by Troodon spol. s r. o.
2013, 4th edition



Safety instructions

For your as well as your coworker´s safety, please read carefully following safety instructions:

The device described in this guide should only be operated by a trained person.

- The device must be protected against falling and other mechanical shocks.
- Neither the device nor the cables should be placed in close proximity of any high voltage components of the vehicle (such as ignition circuit etc.). A failure of the device might occur due to the high voltage.
- It is forbidden to use the device if the connection cables are damaged.
- The device is not waterproof; make sure no fluid gets inside the device. If it happens, unplug power supply, remove the internal battery and let dry for several days.
- Do not expose the device to extreme temperatures. It is also not allowed to use the device in areas with high humidity.
- The device can only be cleaned using soft, dry cloth. Any solvents (paint thinners, gasoline, degreasers etc.) might damage the surface.
- The touchscreen is subject to mechanical damage. Never use sharp objects to control the Troodon device.
- Breaking the warranty seal and disassembling the device will lead to the loss of warranty. The warranty seal is located on the back of the device.

In the package:

- The Troodon diagnostic device
- Transport case (optional)
- User guide and warranty seal.
- Connection cables and software modules as ordered.
- CD with the diagnostic software for Windows PC (PCCenter)
- PC connection cable
- Power supply.

The manufacturer guarantees that all future accessories (such as connection cables or software modules) will be backward compatible with the device you have bought. Since we work every day to improve our Troodon, we suggest following our homepage (www.eobd.cz) for up-to-date offers and updates.

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1

First steps

In this chapter you can find the basics of Troodon interface controlling. You will learn how to handle the device and how to connect it to your computer.

Introduction

The Troodon diagnostic interface is designed as a universal diagnostic tool for both personal vehicles as for trucks. It is highly customizable and allows future updating. It is meant for both serial and parallel diagnostics of vehicles equipped with with electronic control units (ECUs) of engine, ABS, airbags, transmission etc. It allows using diagnostic features provided with the ECU´s manufacturer, such as fault memory readout, fault memory clearing, actuator tests, parameter readouts and many others. The number of diagnostic options depends on the specific ECU and used software version.

Troodon is fully compliant with following standards: ISO9141, ISO14229, ISO14230, SAE J1850, SAE J1979, SAE J1978, SAE J1962 and SAE J2012.

The device is equipped with plenty of memory for loading all current ECUs, it is not necessary to load any new programs to the device´s memory during work.

Using the interface

We have designed the Troodon diagnostic tool such that no special knowledge of IT is required. We have also focused to make the diagnostic process easy and not dependent on the manufacturer of the ECU. For these reasons, operating the device is simple, intuitive and effective.

Indication elements and connectors

On the following picture you can see the Troodon diagnostic interface´s control and indiacion elements with their respective functions.

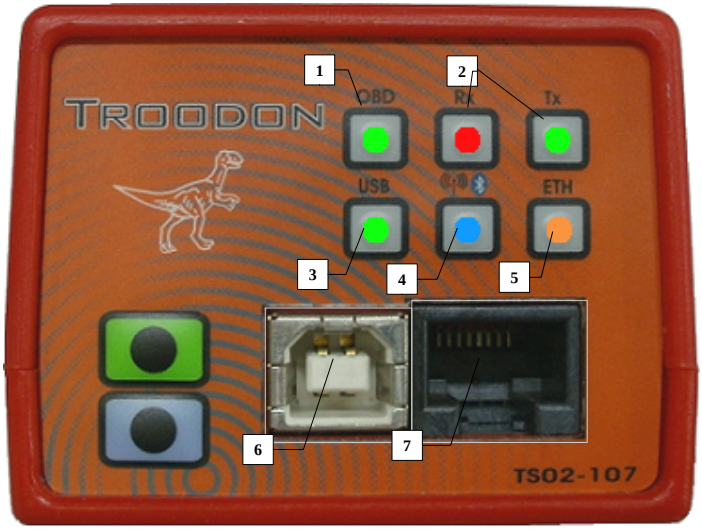


Figure 1.1

The control and indication elements from the Figure 1.1 have the following functions:

1. *OBD* – status indicator
    - LED lit : the interface is connected to a vehicle
2. *Rx a Tx* – indication of communication on the diagnostic bus
    - RX – transmitting data
    - TX – receiving data
3. *USB* – indication of USB connection to a PC
    - LED lits: Troodon interface is connected to a PC network
    - LED blinks: data is being exchanged

4. *WIFI/Bluetooth* – iindicates thet the Troodon interface is connected to a PC network (optional feature)
    - LED lit: Troodon interface is connected to a computer network using WiFi or bluetooth
    - LED blinks : data is being exchanged
5. *ETH* – Troodon interface is connected to a PC network
    - LED lit: Troodon interface is connected to a computer network using WiFi or bluetooth
    - LED blinks : data is being exchanged

Connectors as seen on Figure 1.1 and 1.2*:

6. *connector* USB
7. *connector* RJ45 used for connecting to a PC network
8. *connector* OBDII used for connecting to the vehicle (located on back of the interface)

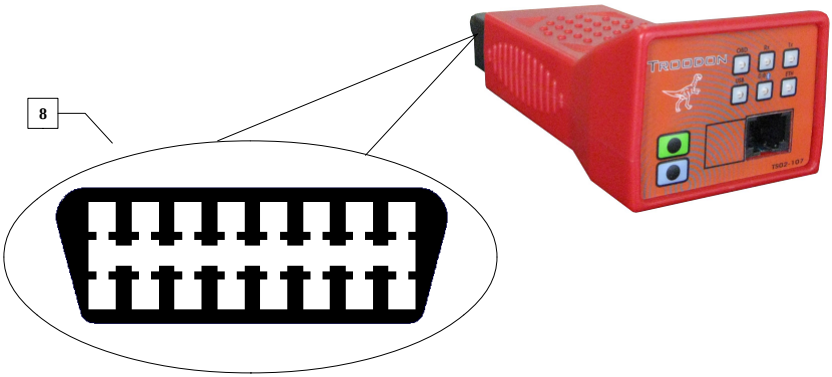


Figure 1.2

*note: individual devices can differ in used connectors (some models may not be equipped with USB or RJ45)

2

PC Center installation

This appendix contains description of installation and setting of the PSPro PCCenter program for MS Windows operating system. The Troodon Wizard is also described in the second part of this chapter.

Troodon Interface PC Center installation

After you insert the installation CD into the CD-ROM drive of your computer, the installation program runs automatically. Now we will guide you trough the installation process and explain basic setting of the program. If an installation window does not appear after you insert the disc into the drive, double click This Computer icon, select the CD-ROM drive and double click on it, then run the StartCD.exe program.

A window (*Figure 2.1*) appears when the installation program is started. You can set the parameters of the installation here such as language, device type, installed software version etc. The selected language inflicts only the installation, not the program itself. The program´s language can be selected in the MainBar (see below).

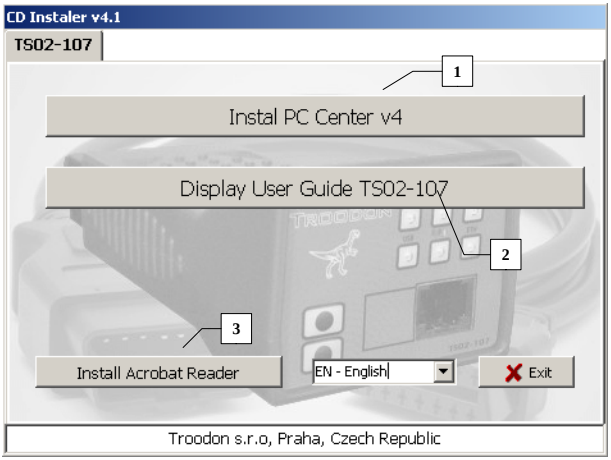


Figure 2.1

You can not only run installation of the PCCenter from the main window, but also install an additional program Acrobat Reader, which is used to view files in the PDF format. Install this program if it is not installed already in your computer, because it is used to view an included manual when you click the

Show Troodon Color manual icon.

When the Install PCCenter v4 button is clicked, the installation begins with displaying a welcome window of the installation and continue by clicking the Next button. You can terminate the installation anytime by clicking the Cancel button.

When the Install PCCenter v4 button is clicked, the installation begins with displaying a welcome window of the installation and continue by clicking the Next button. You can terminate the installation anytime by clicking the Cancel button.

The license agreement is shown in the next window (*Figure 2.2*). Read it carefully, by clicking the I accept the agreement you are obligated to obey it. If you don´t agree with it, the installation can´t be proceeded. To continue installing click the Next button.

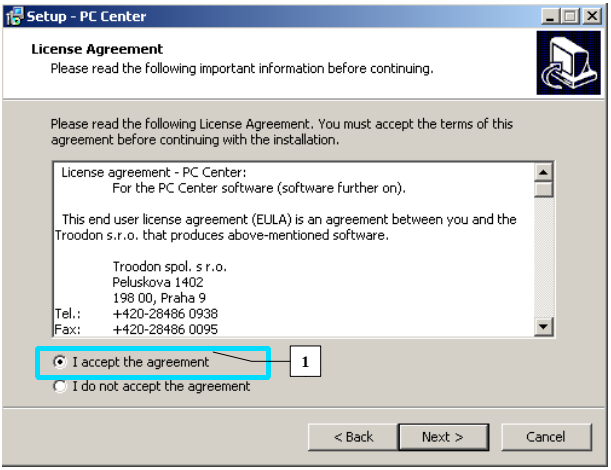


Figure 2.2

In the next window you can see information about the manufacturer, perms and conditions of using this program and minimal requirements for your computer (they can also be found in Appendix D of this manual).

When you click the Next button, a window with option of installing location appears (*Figure 2.3*). We recommend to use the default setting, but you can change it, of course. To continue, click the Next button.

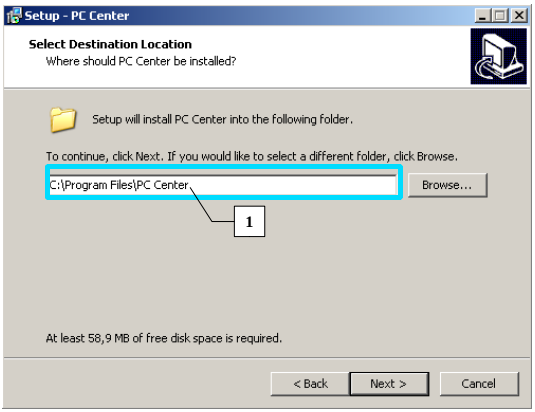


Figure 2.3

In the next window you can change name of the directory in the Start menu or it´s location, which we do not recommend. By default, a PCCenter directory

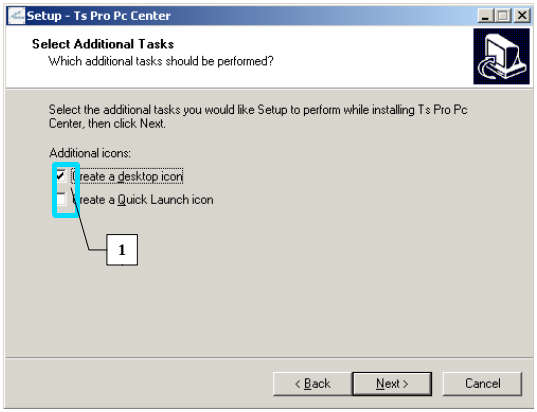


Figure 2.4

in the Programs menu is created. To continue installing, click the Next button again.

In the following window you can choose whether you want to create a desktop icon and an icon in the quick launch panel or not. Then click the Next button.
The new window shows summary of the installation setting. Installation begins by clicking the Install button. The process of installation is shown on the *Figure 2.5*.

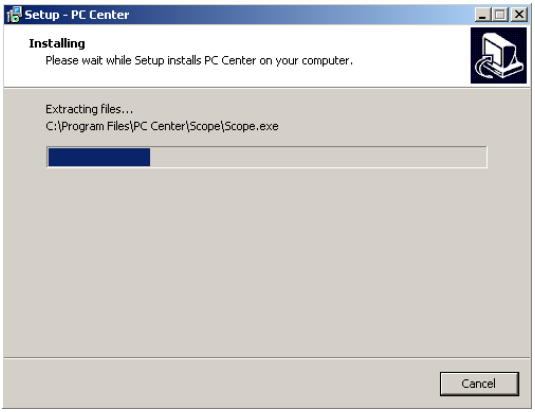


Figure 2.5

A window showing installation summary appears when the installation is finished. It also reminds you that you should change some settings before you start working with the TSPro diagnostic; they are described in chapter PCCenter settings. To continue, press the Next button.
The next window is the last and informs that the installation process was successful. By clicking the Finish button the installing program closes and the installed program is ready for use. If you tick the box Launch PC center it will run immediately after you finish the installation. If you will not do so, you can run it by clicking the PCCenter item in the Programs folder in the Start menu or in the quick launch panel if you have selected the option before.

Odinstalace interface Troodon PC Center

If you want to remove the TSPro PCCenter from your computer, follow these steps. In the Start menu in the Programs folder there is a PCCenter2 folder and here you can find an item Uninstall program PCCenter. After you click it a dialogue window asking you to confirm removing appears (*Figure 2.6*).

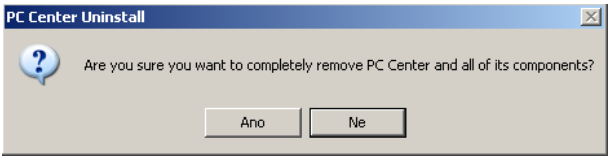


Figure 2.6

By clicking the Yes button you agree that the program will be deleted. A window informing about process´s finish appears after the program is successfully deleted. (*Figure 2.7*).

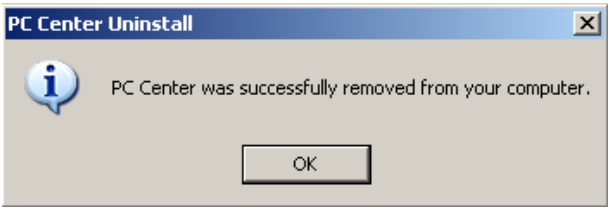


Figure 13.7

Pc Center´s directory tree

A directory tree, where all program´s data is saved, is created when the program is installed. This directory can be found on Figure 12.8. It´s location may vary according to the destination folder chosen during installation, but the directory tree is always the same.

The PCCenter2 folder always contains 4 folders; 3 folders of sub-programs (Starter - serial diagnosis, Scope - oscilloscope and Archive - data

management) and Data folder (*Figure 2.8*). The last one is special because it contains data and settings of all applications.

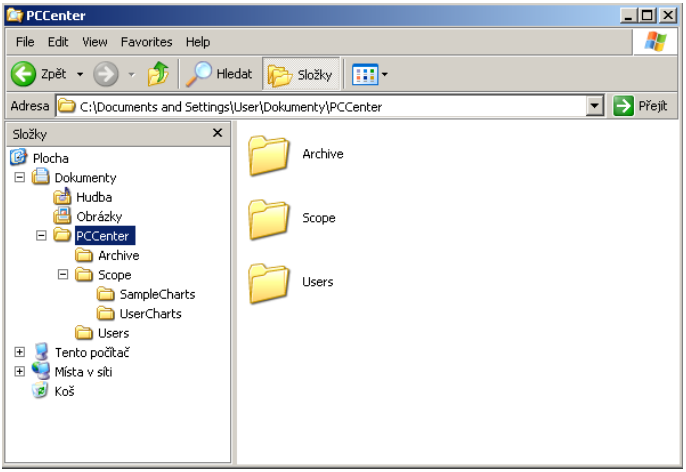


Figure 2.8

Lets describe the purpose of individual folders:

- **Archive:** This directory contains files with diagnostic data loaded from the control units, such as identification, error memory, parameters etc. These files end with *.ERR and are managed by the TSArchive program.
- **Scope:** Data from oscilloscope measurements can be found here. *
- **Starter:** Files used by the PCStarter program are stored here.
- **User***:* In this folder there are files containing data about customers. Files end with *.INI and are used by the PCArchiv program.

*this function is not supported by Troodon TS02-107

Troodon Interface Wizard

The TSPro Wizard (*Figure 2.9*) is used for loading data to the Troodon interface device, notably the diagnostic programs (modules). This program is not a part

of PCCenter instalation CD and is shipped separately. It´s installation and functions are described in a document which can be found on the TSPro Wizard CD.

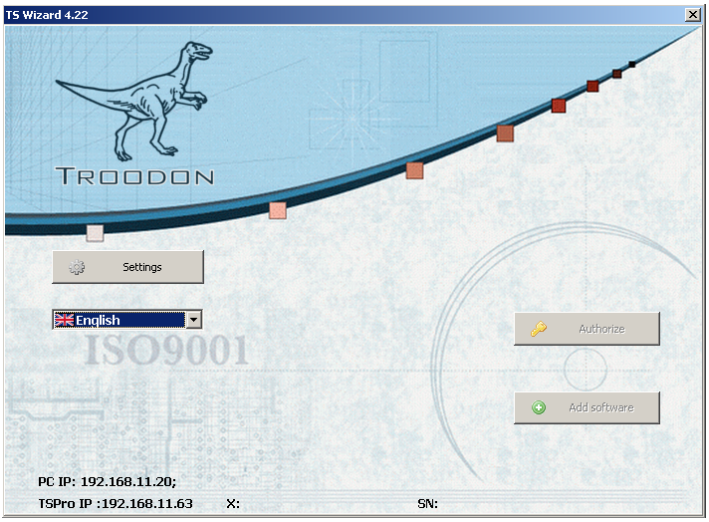


Figure 2.9

3

PC Center Settings

This chapter contains description of the Troodon PC Center program and also how to set up connection of your computer and the Troodon interface.

It is necessary to connect the Troodon interface to your computer in order to perform vehicle diagnostic. Several important parameters also must be set.

Ways of connecting the Troodon interface to a PC

First you have to connect your computer to the Troodon interface. It can be done using three ways of communication:

Figure 3.1 a)

Figure 3.1 b)

Figure 3.1 c)

I. Connect using the Ethernet:

The physical connection is done using LAN interface and a UTP cable. You can see the socket that you can find on your computer on **Figure 3.1a**. The Troodon interface can be either connected directly to your computer or you can connect it to an existing network using a hub or a switch. It is necessary to use a **crossover** cable when connecting to a computer directly and a **direct** cable while connecting the interface to a network. The difference is displayed on Figure 3.2. When the physical connection is done, you have to set the **IP adresses** of your computer and the Troodon interface. An IP adress is a number that identifies a device in a computer network.

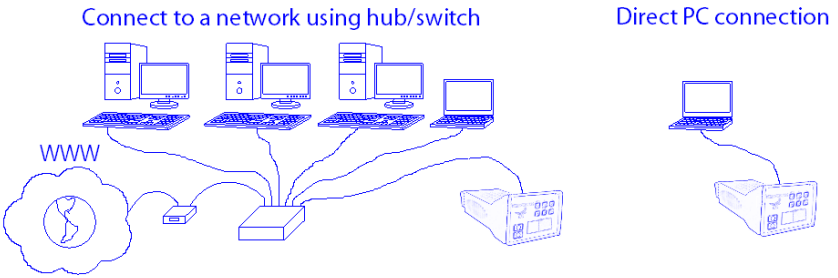


Figure 3.2

IP adress setting procedure:

1. *Setting network parameters in the PC*:

Click the **Start** (1) icon, then **settings** and then **Control Panel** (*Figure 3.3*).
In the Control Panel double click the icon **Network connections** (**Figure 3.4 - 1**).

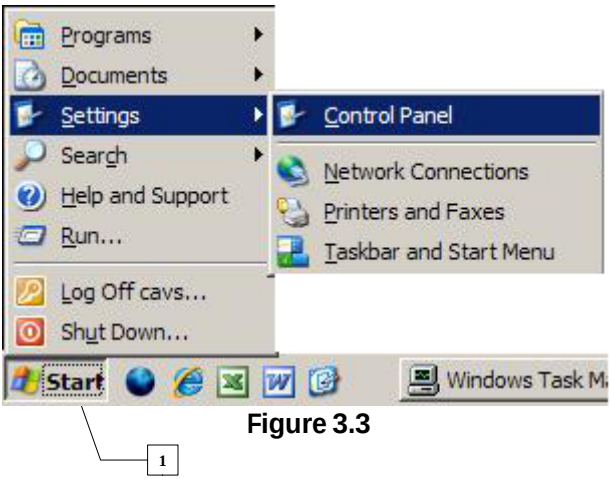


Figure 3.3

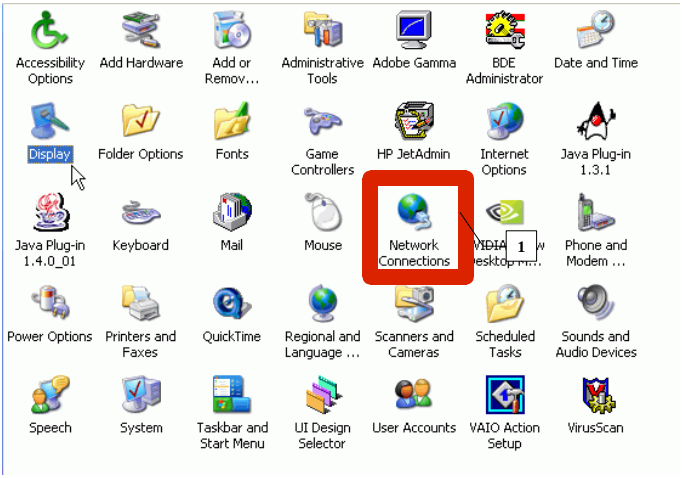


Figure 3.4

A window **Network connections** will appear (*Figure 3.5*). Right click on the Local network connection icon (*1*).

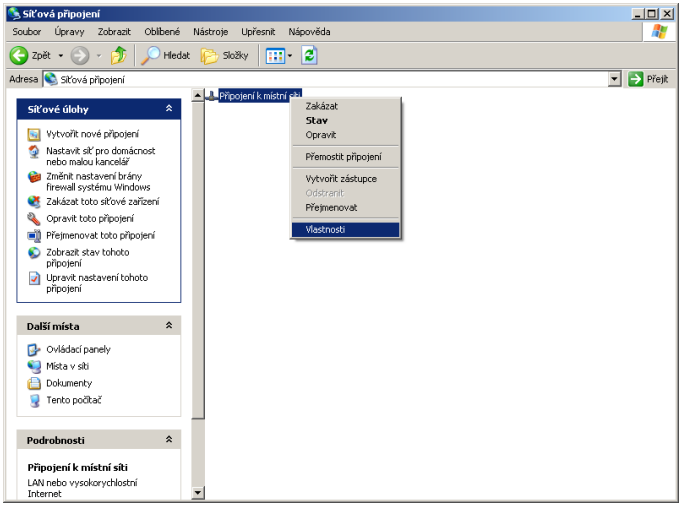


Figure 3.5

You will see a properties window (*Figure 3.6*). Click the Internet Protocol (TCP/IP) item and then Properties. A window with several textboxes will appear. We recommend using IP adress **192.168.13.2** for dirrect connection of the PC and the Troodon interface.

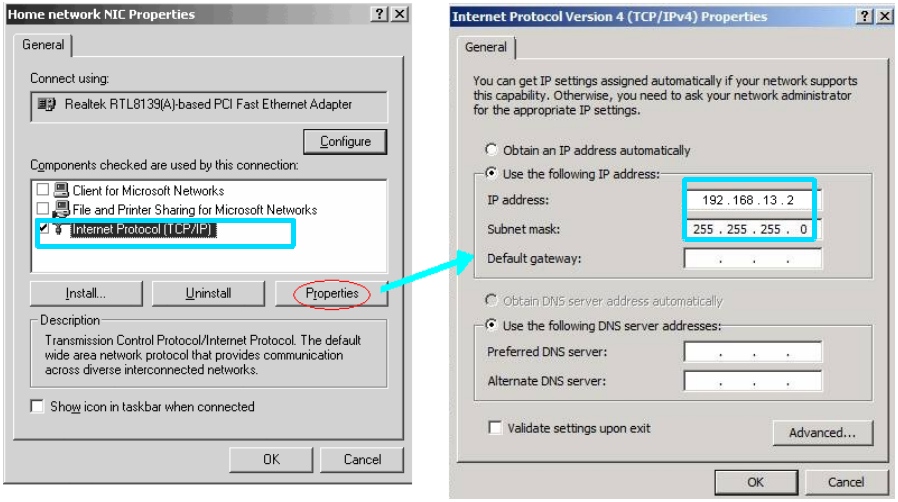


Figure 3.6

2. *MainBar application settings* Run the PC Center program you have installed following the chapter 2. You will see the MainBar (Figure 3.7). Click the Settings icon (1). In the Hardware tab set the IP adress of the interface using the device´s serial number.

Figure 3.7

Every Troodon interface has a serial number in format TS02-TEST50001. Fill in the serial number in the window (*1*) in the Hardware tab (*Figure 3.8*).

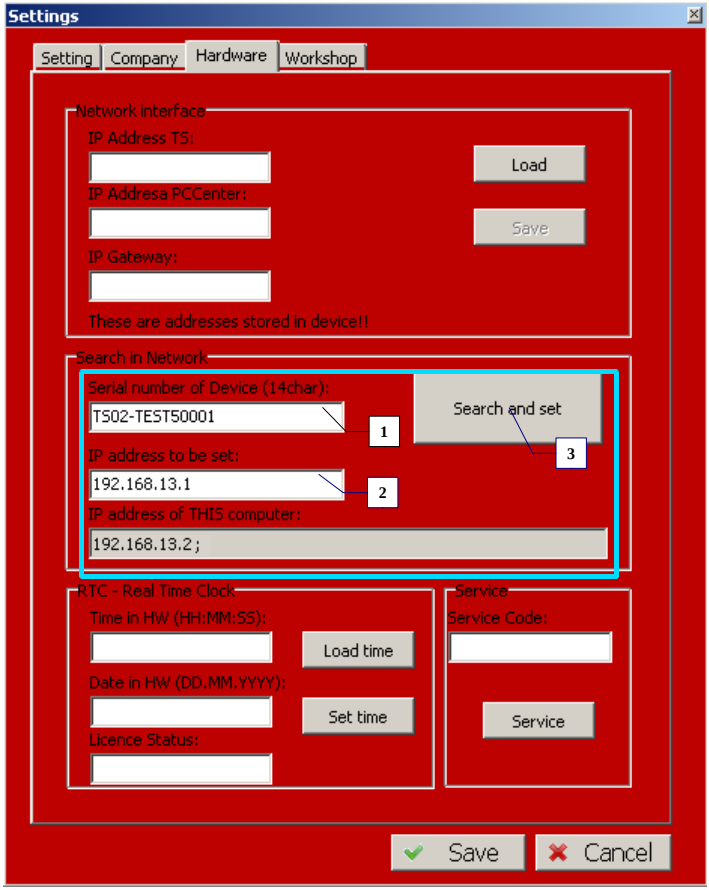


Figure 3.8

Next we must assign the desired IP adress of the Troodon interface in the window (*2*). We recommend using **192.168.13.1**. When the IP adress is set, click the **Search and set** button. You will be asked if you want to change the

IP adress of the device with this serial number; click Yes. Then fill in the adress in **Settings** tab (*Figure 3.9 - 1*) and click **Save** (*2*).

If you don´t know the device´s serial number, fill only **TS02*** in the window (*1*) in *Figure 3.8*. In this case the adress of all Troodon interfaces in the network will be set.

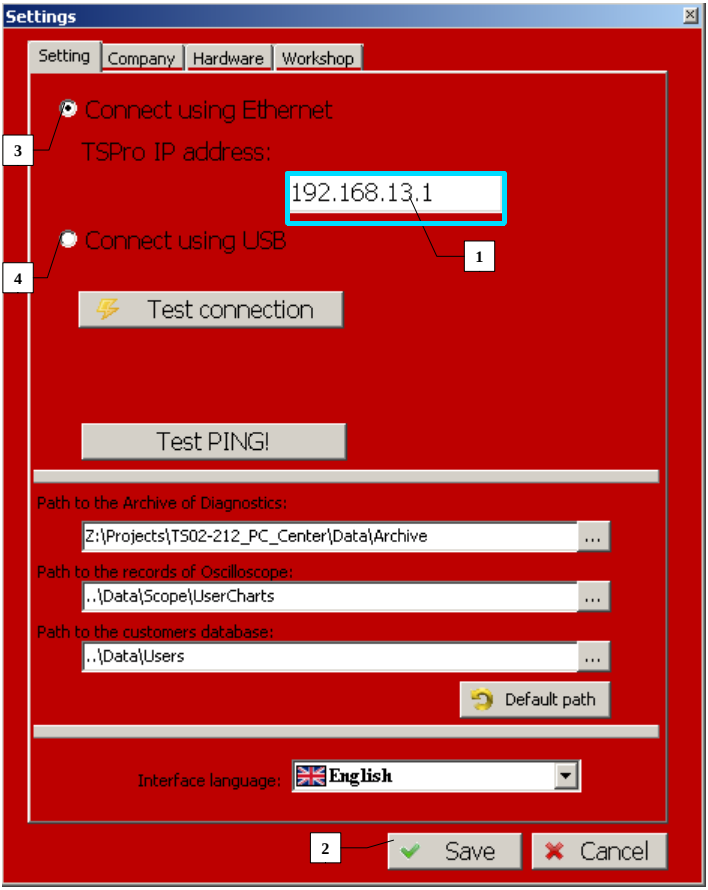


Figure 3.9

3. *Check set parameters:*

If all the networking parameters are set and the computer ic connected to the device with a crossover cable we can perform a network connection test. Click the **Test connection** button and if everything works correctly a sign **Connection OK** will appear (*Figure 3.10*).

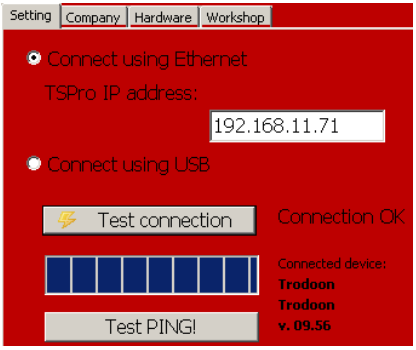


Figure 3.10

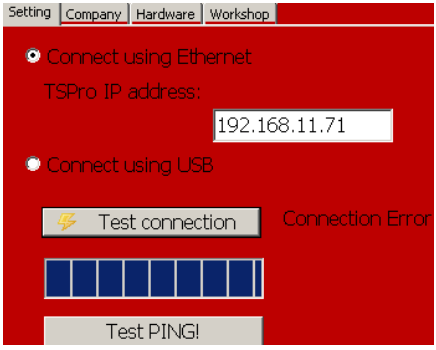


Figure 3.11

If it was the case that a sign **Connection Error** appeared (*Figure 3.11*) it is necessary to check IP adress setting as well as the physical connection.
Should the device be connected into a existing computer network it has to be set accordingly to it´s parameters; incorrect setting might cause network conflicts and the connection will not work.

II. Connection using USB:

It is easier to use the USB connection becouse it requires no parameters settings. Connect the device with a USB cable to your computer (*Figure 3.1b*). In the MainBar click **Settings** and in the first tab click the **Connect using USB** option (*Figure 3.9 - 4*). Then click the Test Connection button (2). If the connection works a sign **Connection OK** (*Figure 3.10*) appears, otherwise you will see a **Connection Error** (*Figure 3.11*) sign; you should check the physical connection.

III. Wireless connection using WiFi:

The Troodon interface may serve as a connection point of a WiFi network (**Access Point**, *Figure 3.12*). To connect to it´s WiFi network you have to have your computer equipped with a wireless network adapter. Select a network **Diagnostika** from your PC and connect to it. Then run the **PC Center** program, click the **Settings** icon and select the **Connect using Ethernet** option (*Figure 3.9 - 3*) and follow steps from Connect using Ethernet paragraph, the IP adresses are the same.

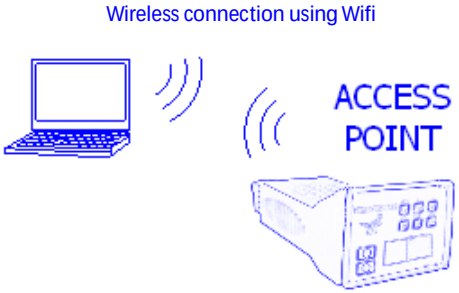


Figure 3.12

4

PC Center

This chapter describes the PC Center program. This programenables you to perform vehicular diagnostic comfortly and to archive collected data.

If you followed previous chapters, you have your Troodon interface connected with your PC and all necessary parameters are set. In this chapter you will be briefly acquainted with Pc Center´s functions which will be described in more detail in following chapters. We eill also show you several useful settings options.

MainBar

The PC Center consists of two applications:

- TSdiag for seriál diagnosis
- TSarchive measured data management

  All applications are started very easily from the application bar **MainBar** (*Figure 4.1*) which appears when the PC Center program is started.

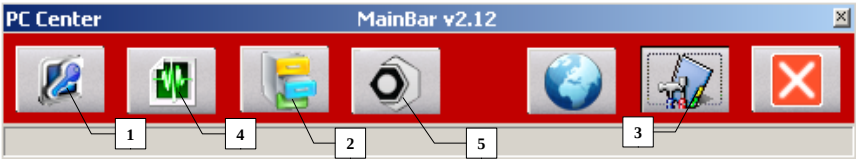


Figure 4.1

By clicking on the icons in the MainBar you can run individual applications. In the following chapters the **TSdiag** (*1*) and **TSarchive** (*2*) will be described in detail. Settings (*3*) is designed to change important settings options of connection and so on. The **Run Workshop** icon (*5*) can be used to access a preset webpage or a frequently used program.

Note: the TSScope (4) is not available for model Troodon TS02-107.

The MainBar is used not only for starting individual applications, but also for overall settings of them. If you click the **Settings icon** (*3*) you can see **Settings window** (*Figure 4.2*), where you can perform all important settings of programs. In the first tab you can select the way of connecting to the Troodon interface (*1*), set it´s IP adress (*2*), perform a connection test (*3*), set the paths to folders where diagnostic data are stored (*4*) and select the language (*5*). The second tab allows you to set some informations about you or your company. This informations will be printed in the heading of every diagnostic protocol.

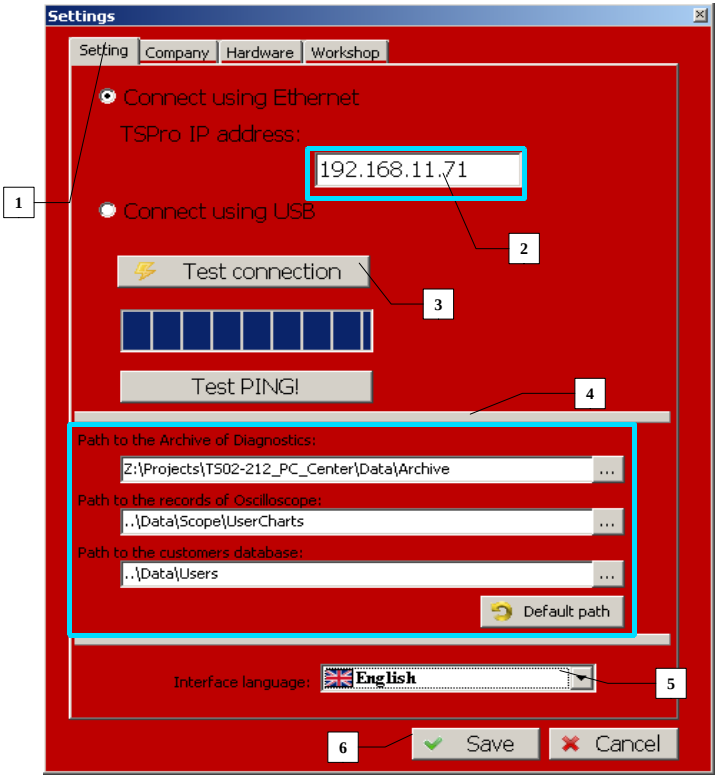


Figure 4.2

Path to directories with diagnostic data

These are the folders where the data you have saved are stored. They are used by the Archive application, in which you can manage your stored data. By default, the paths are set to the folder where the **PC Center** program is installed. You can change it by inputting a different path in the textbox (*Figure 4.2 - 4*)

You can also change the language in which all PC Center applications communicate.

Company information

In the second tab you can fill in some information about you or your company. List of the items that can be set is shown on Figure 4.3. These data will be stored in the Troodon interface and they will be printed in the heading of protocols you print using the bulit-in printing function.

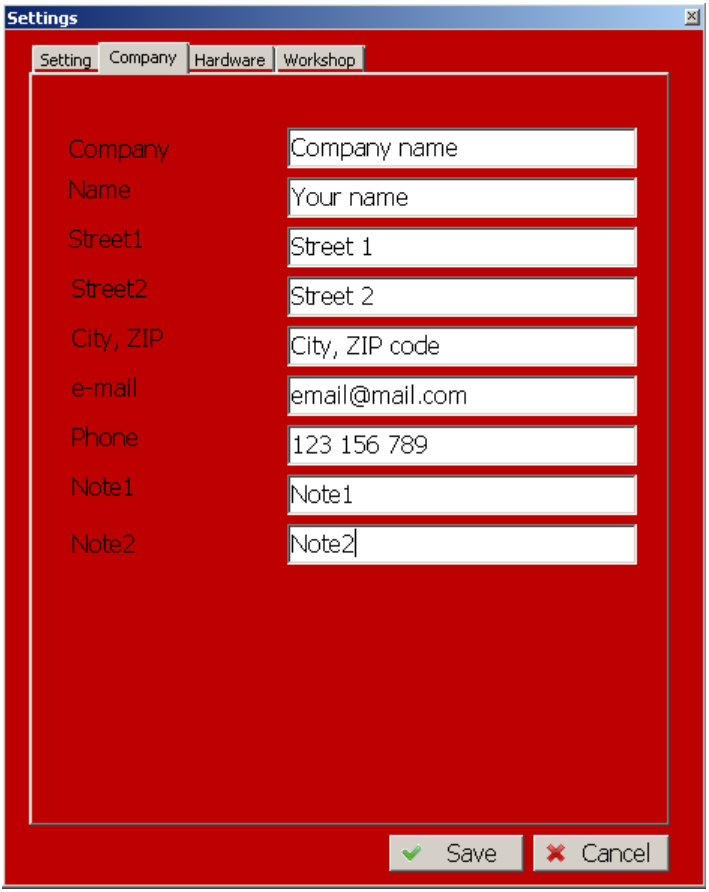

Settings
Setting
Company
Hardware
Workshop
Company
Company name
Name
Your name
Street1
Street 1
Street2
Street 2
City, ZIP
City, ZIP code
e-mail
email@mail.com
Phone
123 156 789
Note1
Note1
Note2
Note2
Save
Cancel

Figure 4.3

Troodon interface parameters loading and setting

In the **Hardware tab** in the **Settings** window you can load and change several important parameters of the Troodon interface. These are: network parameters, loaded software licence and time setting. The window we are talking about can be seen on *Figure 4.4*.

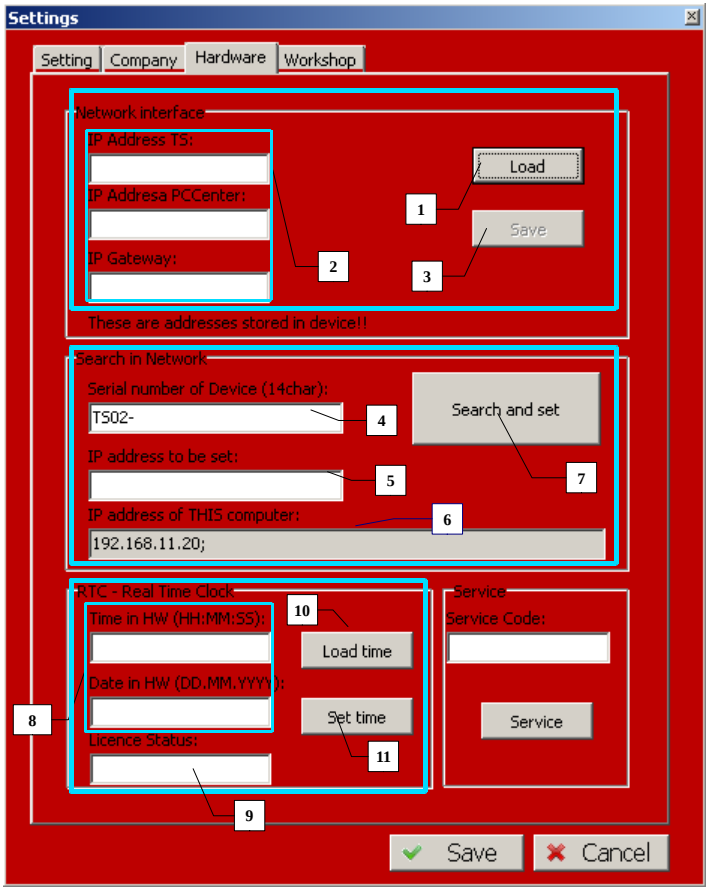


Figure 4.4

Hardware tab

The hardware tab is divided into several sections:

- *Network interface:* Here you can load and change network connection setting of the Troodon interface. If the device is already properly connected, you can check all parameters set in the device by clicking the **Load** (*1*) button. Loaded data will be displayed in windows (*2*). If you change any of them, you can save it by clicking the **Save** (*3*) button. The change will aply after restart of the device. **WARNING!** Incorrect setting of the network parameters may cause loss of connection!
- *Search in network:* With help of this item you can serach an individual interface in a network and set it´s IP adress to a desired value. After you click the **Search and set** button (*7*) the program will try to find the interface with the serial number entered in window (*4*) and the change it´s IP adress to the value set in window (*5*). Window (*6*) displays the adress of your computer. For more information see paragraph **Connect using Ethernet** (*chapter 3*).
- *RTC-real time clock:* This item is used to check and change time and date settings in the interface. After clicking the **Load time button** (*10*) the time and date will be shown in windows (*8*). If you change them you can load them in the device by clicking the **Set time** (*11*) button. Also, if you load the device´s time, the licence status appears in window (*9*). It there is a UNLIMITED sign it means that the SW licence in this device never expires, otherwise you will see number of days remaining.
- *Service*: This item is only to be used by the manufacturer.

Workshop tab

The Settings window also contains a **Workshop** tab which can be used to fast access to web pages containing technical data for automotive service, manuals and so on.

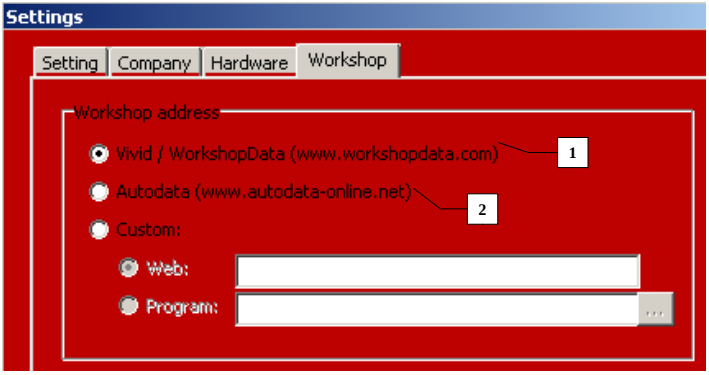


Figure 4.5

You can choose from two preset webpages - www.workshopdata.com - (*1*) and www.autodata-online.net (*2*). You can also set any webpage of your choice by clicking the **Custom** item and filling in the first window; or a program by filling in the path to it in the second one. Any changes must be confirmed by clicking the **Save** button. The button (*5*) on *Figure 4.1* is used to acess this preset webpage or program.

5

Diagnostic

In previous chapters you have learned how to use the Troodon device. In this chapter we´ll show you how to diagnose with the Troodon PC Center.

Now you will learn how to do common diagnostic procedures, e.g. memory readout and clearing, reading parameters, actuator tests and many more. If using of the functions varies depending to the manufacturer, it will be described. There is usually a lot of differencies when diagnosing VW-group vehicles, so we will focus on them in detail.

Introduction

When the Troodon PCCenter program has started, you can see the main window called MainBar. To run the TSDiag module, press the rightmost button (Figure 5.1).

Figure 5.1

Now you can see the initial screen of the TSDiag application (Figure 5.2).

Figure 5.2

Vehicle diagnosing

We have to choose the vehicle´s manufacturer on the initial screen (Figure 5.2). If you choose the EOBD/OBD2 protocol, you can perform basic diagnosing which is supported by all manufacturers. The EOBD/OBD2 protocol is described in detail in Appendix A.
After the manufacturer is selected, you have to choose the vehicle type (1), control unit type (2) and control unit system (3) in the list.
In the upper right of the window you can see the diagnostic socket location (4) and down on the screen the cable needed (5).

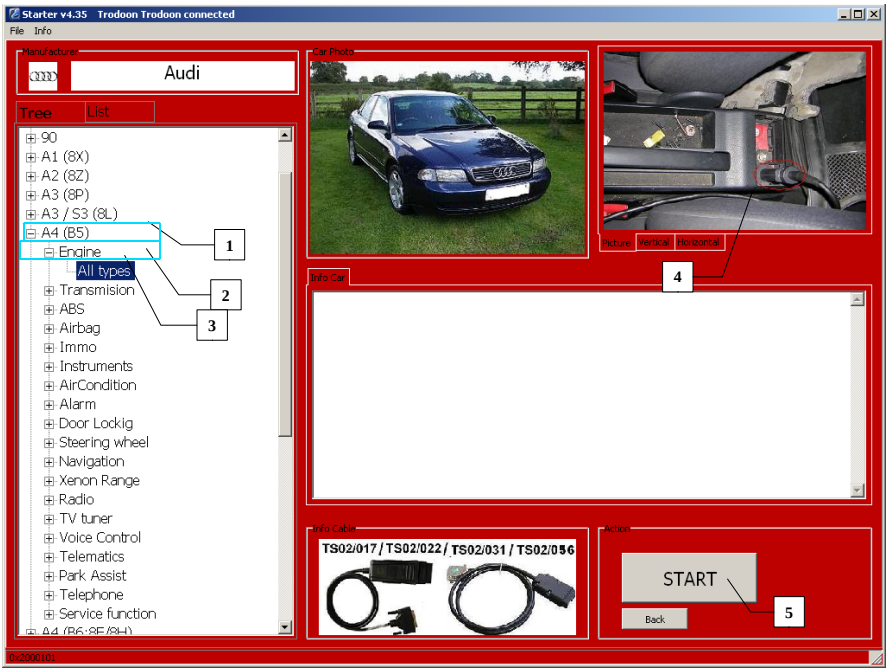


Figure 5.3

If the type and system of the control unit is selected and confirmed by clicking the START button (5), a dialog window (Figure 5.4) telling us to turn the ignition on appears. In the upper part of the screen you can see information

about selected diagnostic device (1).
You have to start connecting procedure after turning on the ignition and clicking the corresponding button (2). Then, if the connection was successful, a Diagnostic menu appears (Figure 5.5).

Figure 5.4

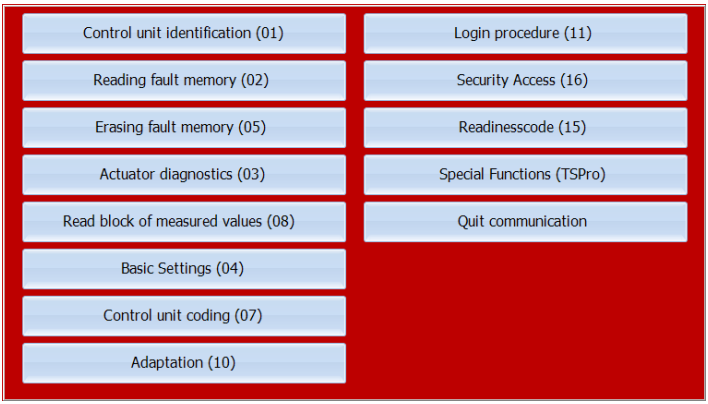


Figure 5.5

The actual Diagnostic menu may vary depending on the system type, manufacturer or year of manufacturing. In the following text we will describe individual diagnostic functions that may appear.

Control unit identification

In this unit (Figure 6.6) you can see basic control unit info, e.g. it´s type, manufacture number, manufacturer, program version etc. The list can be different in different control units. You can exit this menu, as well as any other, by clicking on the button in upper right corner (Figure 5.6 – 1).

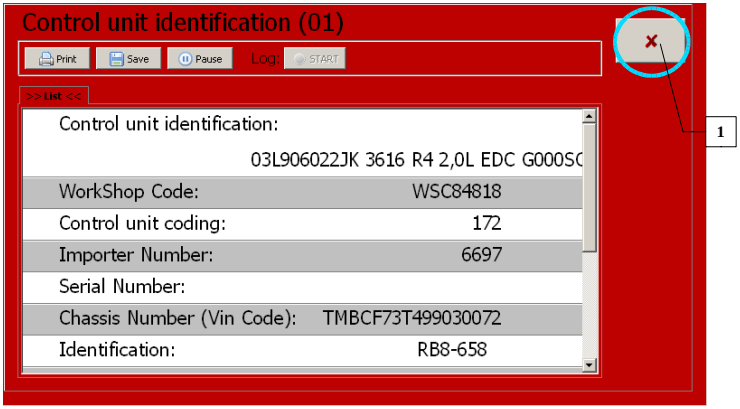


Figure 5.6

Reading fault memory

After confirming this option the device loads list of faults saved in the control unit´s memory, and displays them, if there are any (Figure 5.7). Warning - in real cases the number of faults may vary! Individual items contain a sequential number/number of faults (1), fault code (2) and the text description itself (3).
After the list loads you can save it, print it or copy to clipboard. All these options can be found in a box on the right side (4).

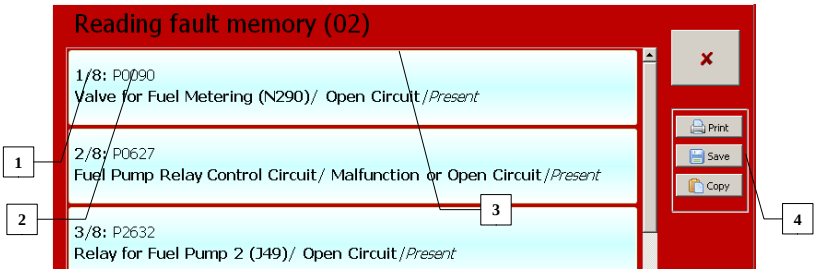


Figure 5.7

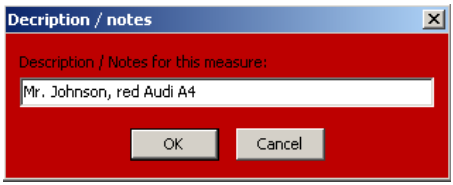


Figure 5.8

Erasing fault memory

In the previous paragraph you have learned how to read the fault memory. No we will show you how to delete it. Remember that the fault memory can be erased only if it has been read previously! After you select the corresponding item in the Diagnostics menu, a window asking for permission to erase it appears (Figure 5.9).

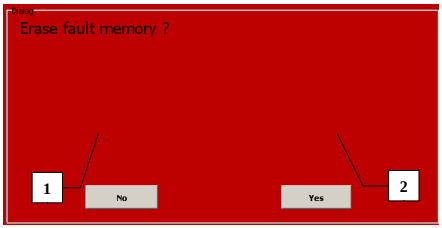


Figure 5.9

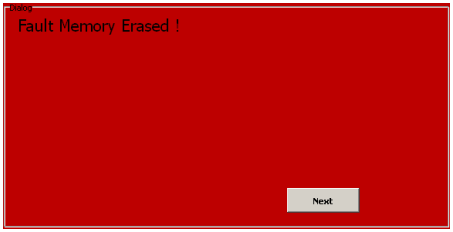


Figure 5.10

System parameters

You can browse measured parameters in this menu (Figure 5.11). For example, in engine control unit you can find battery voltage, vehicle speed, intake air temperature, rpm, throttle etc. For detailed information on particular items see service manual of the diagnosed device.

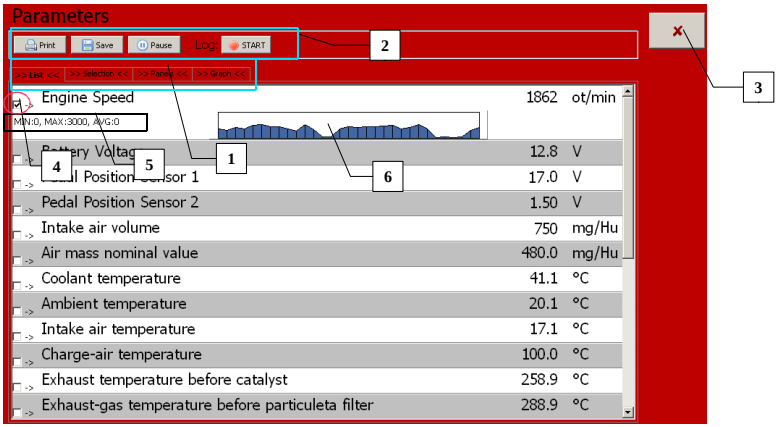


Figure 5.11

Using this function you can see all parameters supported by the control unit (Figure 5.11). To scroll the window up or down, press the arrows on the right next to the scrollbar. A simple graph (6) and a minimal, maximal and average value (5) appears after checking a checkbox (4) next to any parameter.
You can save the list using the Save or Start buttons in the bar above the parameters (2), or a Print button to print it, or a Pause button to pause it.
The difference between saving the parameters using Save or Start icon is:

- If you press the Save button a list of currently displayed parameters with current value. The procedure is the same as when you save the fault memory (see Reading fault memory).
- Pressing the Start button starts logging (long-time parameter record). All displayed values are saved to a file; the size is limited by computer´s free memory.

Sometimes you may want to watch only particular parameters. In this case you can make your own list of parameters by clicking the Parameter select tab

(Figure 5.12 - 1) and checking desired parameters. Using the On/Off button you can check or uncheck all the parameters.

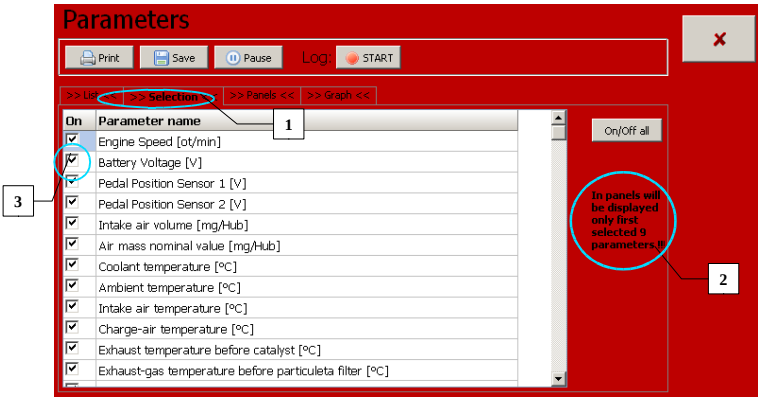


Figure 5.12

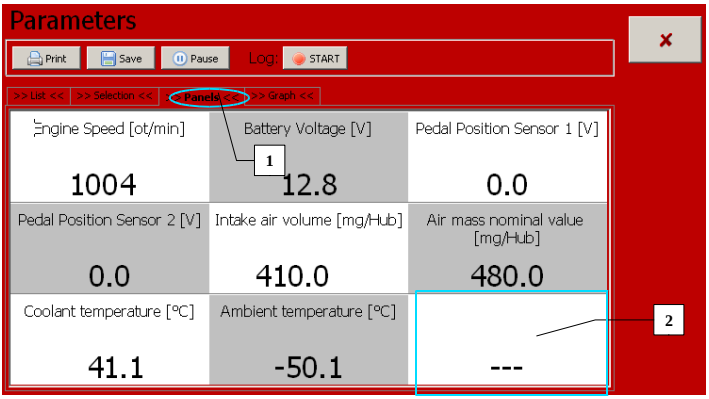


Figure 5.13

Another useful feature is displaying parameters on panels. This type of displaying can be started by pressing the Panels tab (Figure 5.13 - 1). Maximum number of displayed parameters is 9, if you have selected more than 9 parameters only the first 9 of them are displayed. If there are less than 9 parameters selected the remaining panels are filled with dashes (2).

Read block of measured values

This function is a variation of the previous one and is designed for displaying measured parameters. *This function can only be found in VW-group vehicles, e.g. Audi, Seat, Skoda and Volkswagen.*

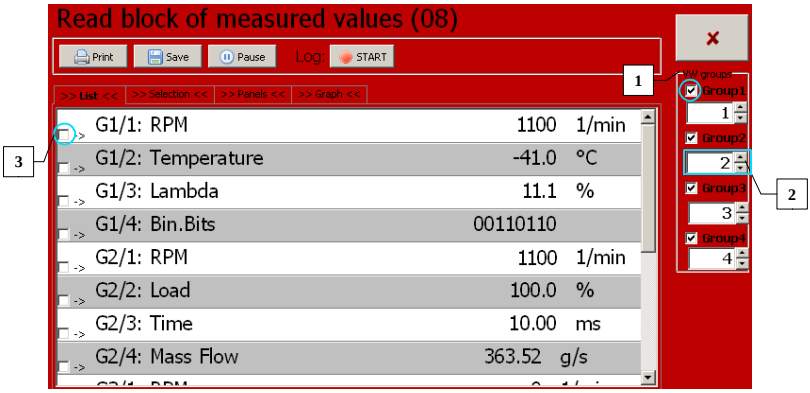


Figure 5.14

We can measure up to four independent parameter groups (G1 - G4) at once in the Read block of measured values mode (Figure 5.14), where every block contains up to four parameters, for example G1/1, G1/2 etc. Displaying the given group is activated by ticking the checkbox (1). We can change the number in the block, thus change the 4 parameters. A simple graph and a minimal, maximal and average value appears after checking a checkbox (3) next to any parameter.

Selection of parameters and panel displaying is similar to the System parameters.

Read single measured value

This menu is an other variant of loading measured parameters which you can find only in VW-group vehicles. It is not used in today´s vehicles; you can find it in older control units. It is used the same way as the Reading block of measured values option. All setting is done by buttons on the right side of the window.

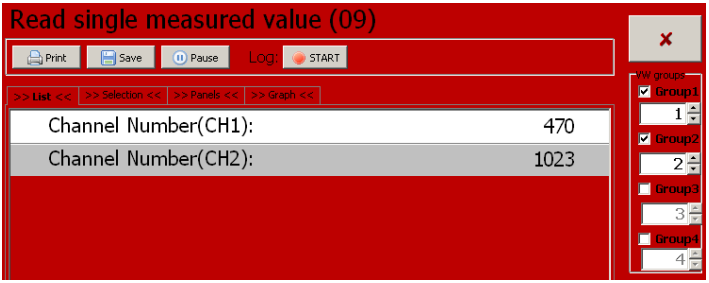


Figure 5.15

Actuators test

An other list item in the Diagnosis menu is **Actuator diagnostics**. Using this function you can test whether the actuators work or not. For example, you can test injectors, fuel pump relay and so on (*Figure 5.16*). The number of items in

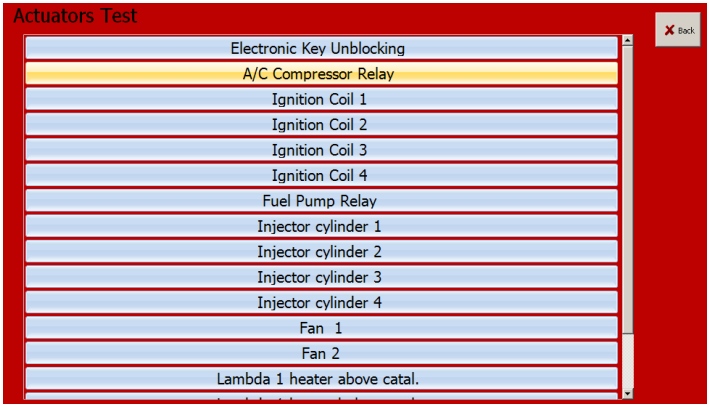


Figure 5.16

this menu depends on individual manufacturer and the year of manufacturing.
Actuator testing enables us to test the whole way from the control unit to the actuator, e.g. output circuit of the control unit, ports, cables and the actuator itself.If you activate an item from the menu, a window displaying information about the current test (*Figure 5.17*). You can check the procedure etiher visualy or by hearing.

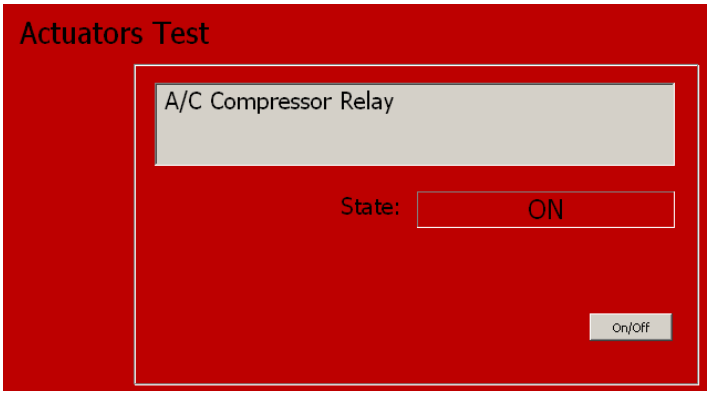


Figure 5.17

The actuator test differs in the VW-group vehicles. A list of actuators does not appear if you select this function as on the *Figure 5.16*, but the device sends a request and the control unit activates the actuators in a pre-programmed order, so the user only confirms start of a new test by clicking the Next button

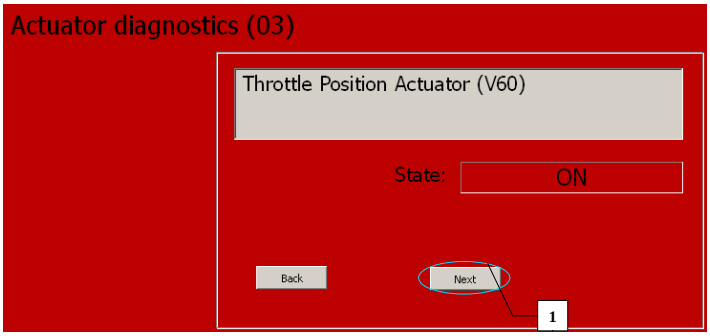


Figure 5.18

(*Figure 5.18 - 1*). If you send a request and the control unit has already performed all the tests a window with information appears.

Configuration setting / Parameter setting

This item contains all functions used to set important system parameters, it´s configuration, initialization after changing parts and so on. A list of available functions of the EDC16C39 system can be found on the *Figure 5.19*. The actual number of items depends on current system type.

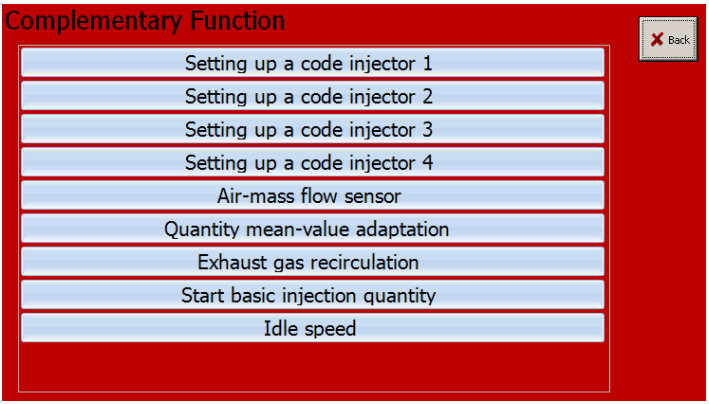


Figure 5.19

Let us now introduce some functions that you can find in this menu.

Injector coding

One of the most frequently used common-rail functions is injectors codes settings. The calibration constant contains mechanical parameters of the injector and it is necessary to edit them after every injector replacing. The length of this constant varies depending on the injector´s manufacturer and type. An example of this setting can be seen on the *Figure 5.20*.

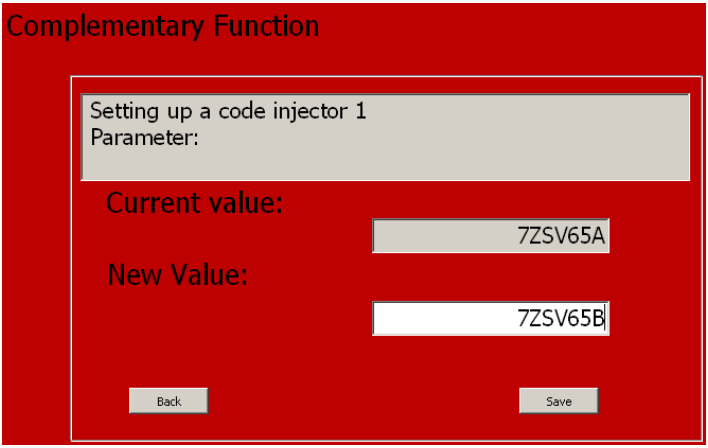


Figure 5.20

DPF regeneration

Another important function in diesel systems is diesel particulate filter regeneration. Whenever the engine is running the filter clogs and can be even blocked completely. In this cafe we have to perform regeneration. The device sends a request if we select this option and if all criteria are met (engine and exhaust temperature), the regeneration starts and may take up to 20 minutes.

Driving angle / acceleration sensor calibration

You can calibrate these sensors in the ESP system. It is important to do so when you have changed these sensors. Calibrating the driving sensor is also important after any axle servicing.

Configuration setting - airbag

Using this function we can change configuration of the airbag system, e.g. to turn on or off individual elements of the system, for example seatbelt pretensioners, passenger airbag, head airbags and so on. An example of such configuration is on *Figure 5.21*. If we choose a parameter, for example (*1*), we can change it´s value by pressing the button (*2*). All changed items are marked by a ***** (*4*). If you want to use these values, press the Save button (*3*). Now the setting is saved in the control

unit. Then we recommend to turn the ignition off and on and check error memory.

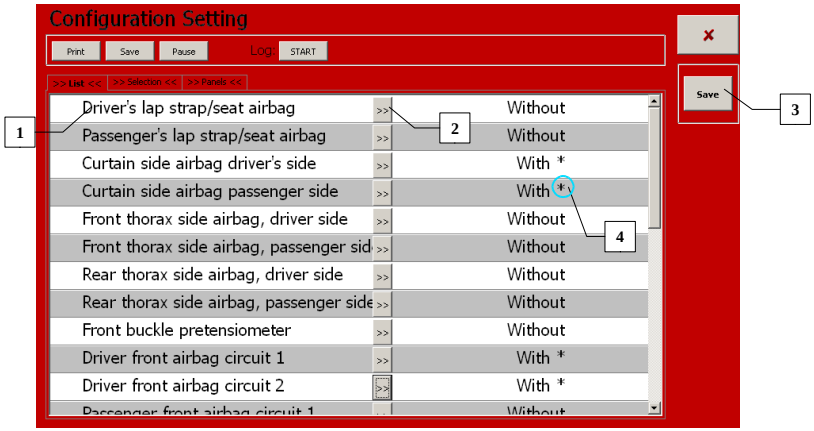


Figure 5.21

VW group and it´s differences

Now we will describe diagnostic functions which are specific for Volkswagen group vehicles.

Basic settings

This function enables returning the control unit to the original setting (*Figure 5.22*), which means that the adaptation data and setting is deleted. It is often used during or after throttle calibration, hydraulic ABS bleeding or xenon calibration.

Figure 5.22

First we have to select the desired function using the icon (1) on the Figure 6.22. procedure. It´s status is indicated by the Status (1) value on the Figure 6.23. The state is indicated either by 1 and 0 sequence or by a sign ADP running / ADP OK. An exactly defined sequence of 1 and 0 or an ADP OK sign indicates that the procedure is finished and we can quit it by pressing the Stop (2) button.

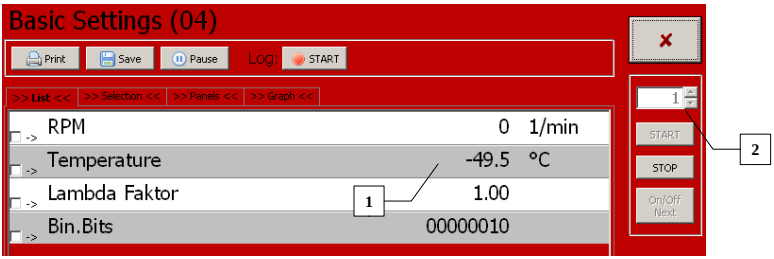


Figure 5.23

Control unit coding

Using this function we can input the 5-character code which defines the vehicle´s configuration (*Figure 5.24*), for example whether the AC or ABS is present, if manual or automatic transmission is used etc. This function is only present in VW-group vehicles.

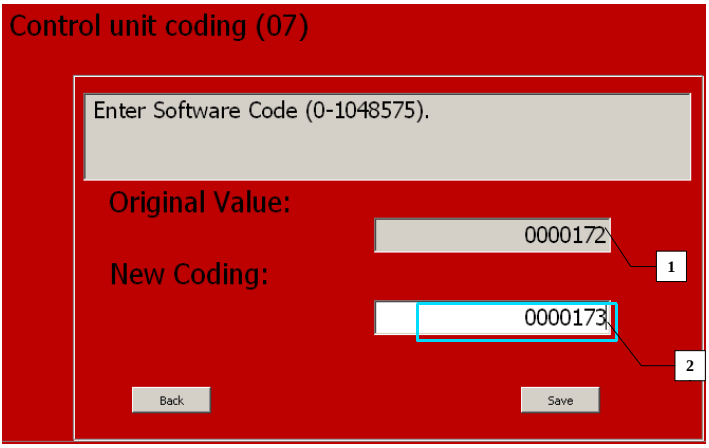


Figure 5.24

First, we have to select the desired group using the button (*1*) (*Figure 5.22*). After pressing the Start button (*2*) you will be asked to confirm the changes (*Figure 5.25*) and if you do so a result of the change is displayed (*5.26*).

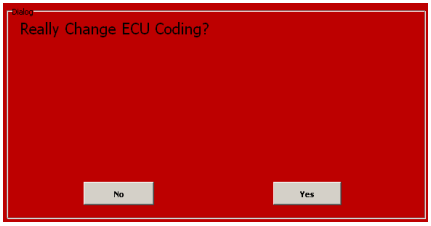


Figure 5.25

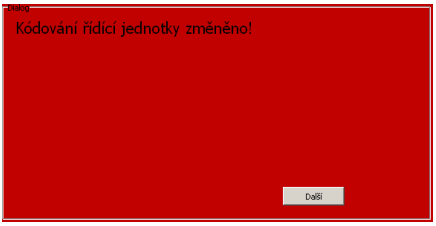


Figure 5.26

Long coding

Newer control units communicating via CAN protocol use Control unit coding to change it´s configuration. Using this function we can activate functions such as permanent lights, window comfort function, coming home etc.

Instead of a 5 character code a longer one (string) is used. Exact length depends on the type of the control unit; it can be up to 128 characters.

The string is divided into groups of 10 characters. You can see information about current part of the code in the upper part of the window (*2 and 3*). On the *Figure 5.27* you can see a window with the first group of characters. If you have set the desired value (*3*), press the Save button and you will either be able to set the next 10 characters (*Figure 5.28*), in our case it is only 4 characters, or if there are no characters left you will be asked for final confirmation of the coding change (5.*25*) and if you do so a window with result appears (5.*26*). If you press the Back button during the changes, the function is aborted with no changes.

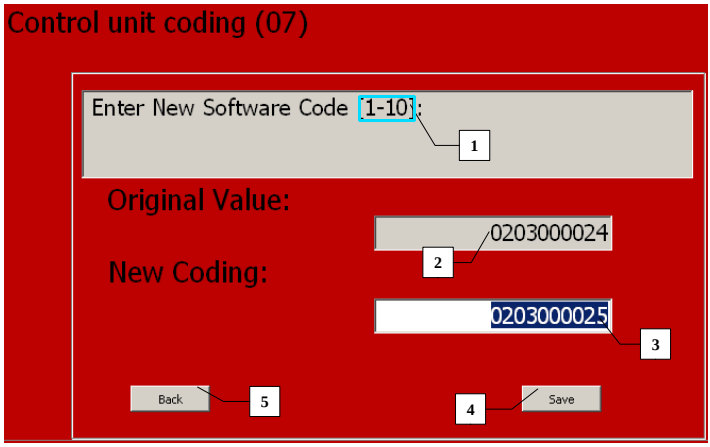


Figure 5.27

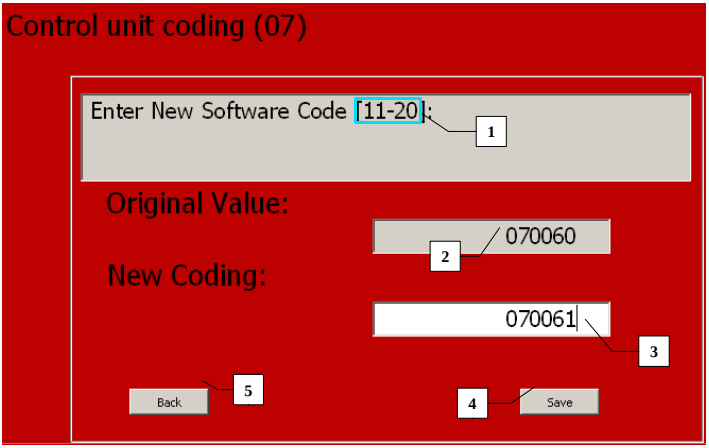


Figure 5.28

Adaptation

This function is used for specific setting (Adaptation) of control units. Using this function we can set and reset service intervals, perform an adaptation of new keys and remote controls, perform a correction of starting dose of a TDI engine, set idling RPM and so on.

An example of the procedure of changing adaptation values can be found on following pictures. On the *Figure 5.29* you can see a window used for changing the channel number (*1*). After pressing Next button (*2*), a request for current channel number is send. On the *Figure 5.30* you can see a window with the old adaptation value (*1*) as well as the one with the new one (*2*).

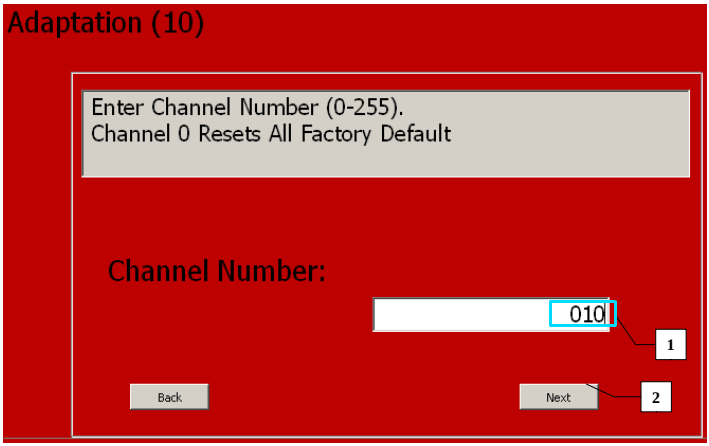


Figure 5.29

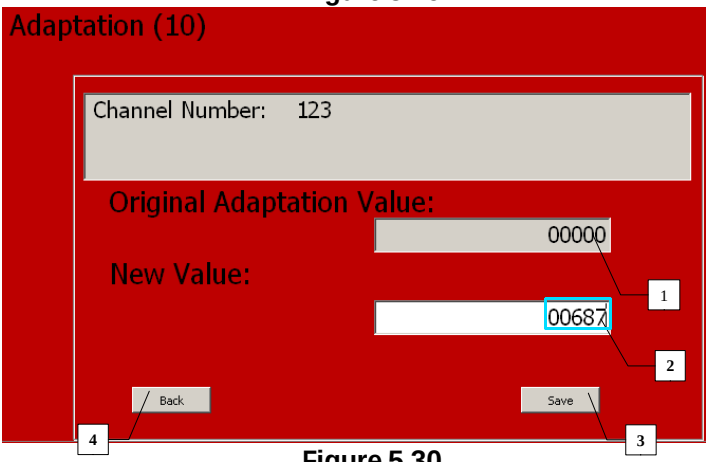


Figure 5.30

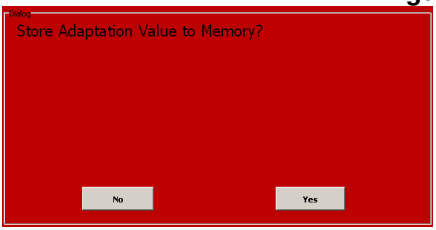


Figure 5.31

Figure 5.32

Press the Save button (*3*) if you have set the desired value, and you will be asked for final confirmation of the change (5.*31*), and if you do so a window with result appears (5.*32*). If you press the Back button during changing the function is aborted with no changes.

Login procedure

In some control units you have to input an authorization code/password in order to perform certain settings (changing keys etc.). This is done using the Login procedure option (*Figure 5.33*). After you input the password (*1*) and press the Save button (*2*), the program asks you for confirmation of unlocking.

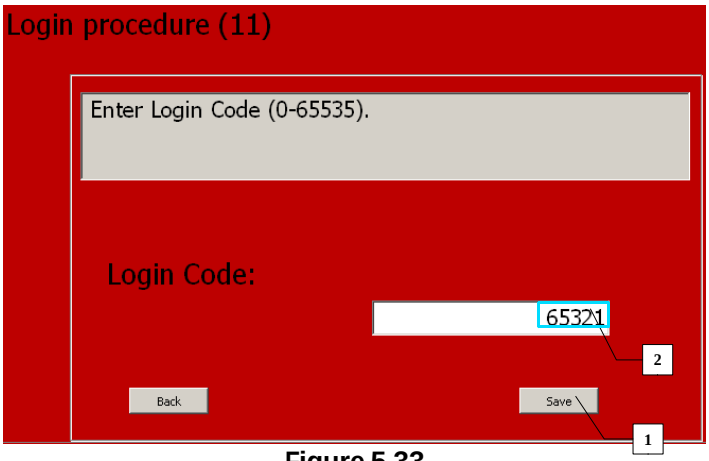


Figure 5.33

An information window about whether the code was accepted or not appears (*Figure 5.35*).

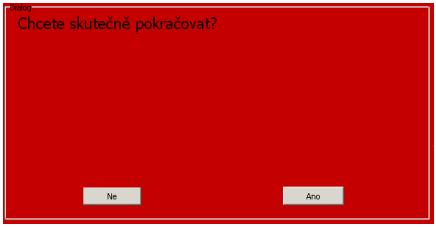


Figure 5.34

Figure 5.35

Readiness code

Readinesscode appears in vehicles supporting OBD-II since 1996 and is related to the catalyst and lambda probes. Exact meaning of individual test bites is explained in **Appendix A** of this manual.

Special functions (Troodon)

The Special functions option contains of predefined functions to make complicated operations easier. Using this function you can perform certain configuration without exact knowledge of the procedure. These are, for example: throttle setting, fuel dose setting, injection start setting, DPF regeneration, stretching the brakes, turning the ambient light on or off etc. This function appears mostly in VW-group vehicles and the exact functions depend on the given control unit. An example of these functions can be found on Figure 5.36.

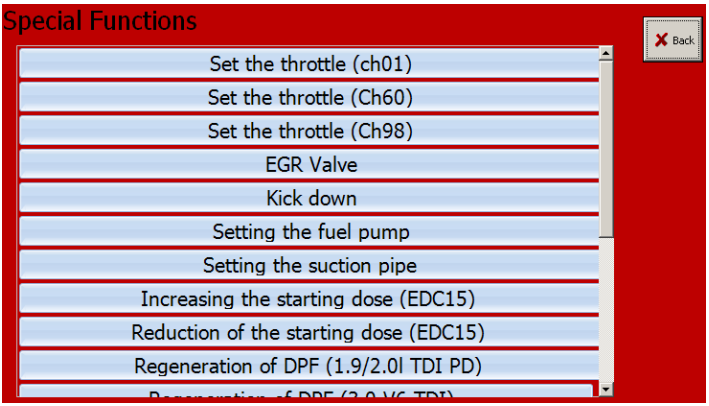


Figure 5.36

Quit communication

It is necessary to disconnect the device properly after you finish with diagnosing. We can do this by clicking the **Back** button in the Diagnosis menu or by clicking the **Quit** communication icon on the screen. You will be asked to turn the ignition off (*Figure 6.38*). The Control unit selection menu appears on the TSPro device´s screen after confirming (*Figure 3.3*).

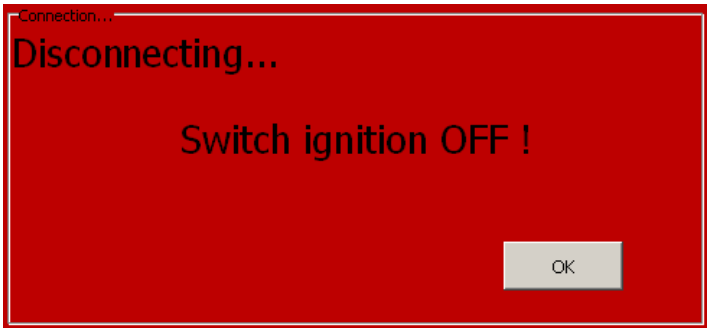


Figure 5.37

6

PC Archive

In this chapter we will describe the Archive application which is used for customers and recorded data management.

Introduction

The application is started from the MainBar by clicking on the drawer icon (*Figure 6.1*).

Figure 6.1

When it is opened, you can see the Archive application (Figure 8.2).

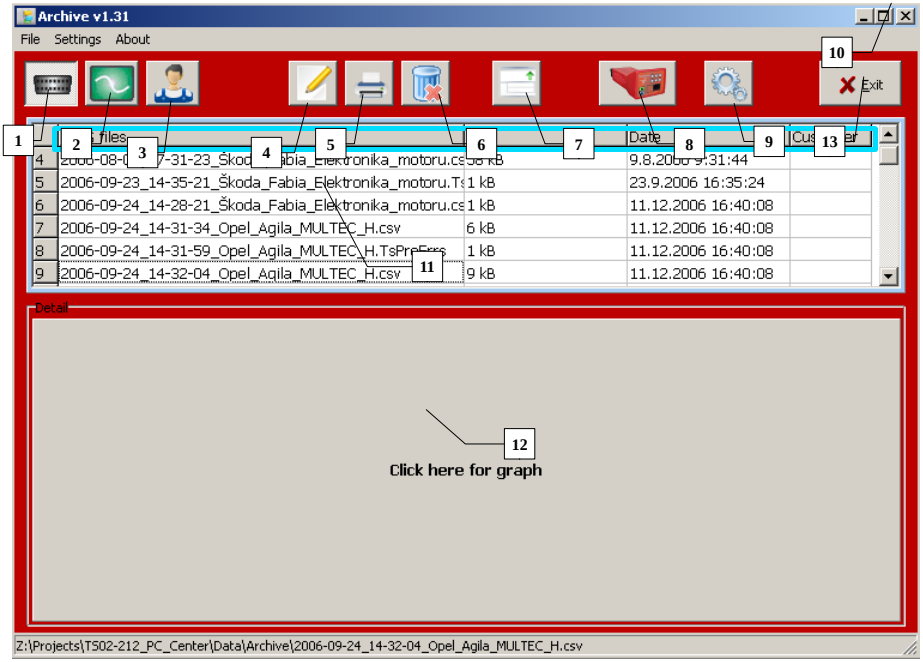


Figure 6.2

Using this application you can perform complete management of measured data, such as loading data from the device, showing the content of the individual records, adding notes, renaming or deleting records, print, matching records to individual vehicle or customer and many more. The main window is divided into three parts. In the first one you can find the menu bar and icons of the mostly used operations, such as selecting the desired database, loading data from the device, application settings and so on. The second one (11) shows the list of records from the currently selected database, and the third one (12) shows the content of the currently selected item.

Now we will describe functions of individual icons and displayed windows (from left to right):

1. *Diagnosis* - open the database of records from serial diagnosis (faults, parameters)
2. *Oscilloscope* – open the database of oscilloscope measurements*
3. *Customer* – open the database of customers
4. Records editing
5. Printing diagnostic protocols
6. Deleting records
7. Changing of the proportions of windows (11) and (12)
8. Loading data from the TSPro device
9. Application settings
10. Quit application
11. Window displaying the list of records
12. Window for displaying contents of selected item from the window above.

*this function is not supported by TS02-107

Database of diagnostic data

If you want to use the diagnostic data database, click on the Diagnosis icon (1). The list of saved records appears in the window (*1*) (*Figure 6.3*). Every item in this list contains the name and size of the file, date and time of creation and an identification number of the assigned customer (*U1, U2, ...*). The content

appears after clicking on an item from the list in the Detail window (*2*). An example of such record can be found on the *Figure 6.8*, where you can see information about the control unit from which this record comes from, vehicle type, control unit type and it´s identification and error memory content.

You can sort the items in the diagnosis database by their names, file sizes, date or by customer identification number by clicking on the title of a column. For example, if you click on the Size title, the records are sorted from smallest to largest, and if you click on it again, it is sorted in reverse order - from largest to smallest. Sorting records by their name etc. follows the same principle.

Items ending with *.csv contain a graph of measured values; you can view it by clicking the lower part on the screen (*Figure 6.3 - 2*)

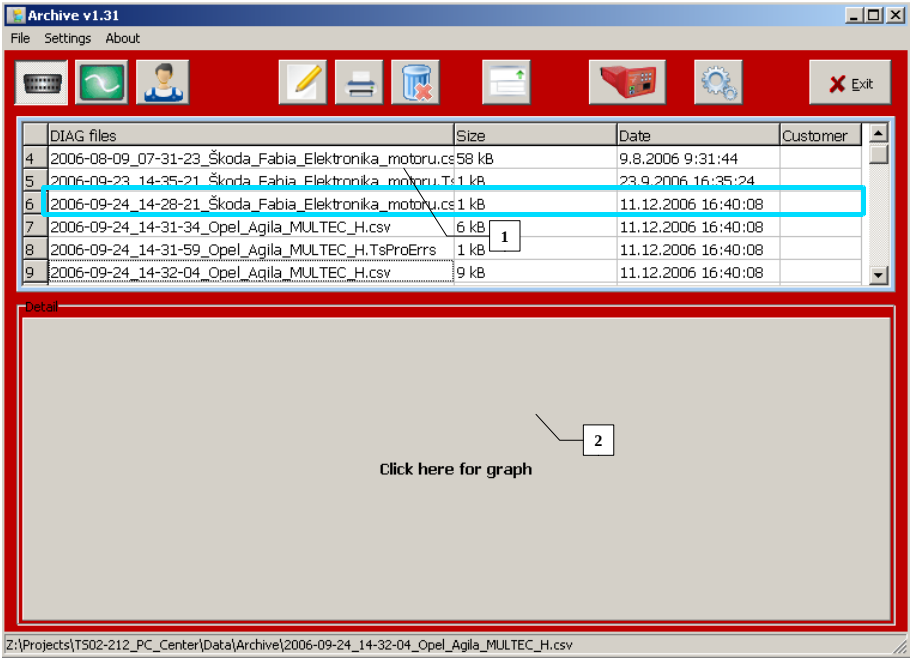


Figure 6.3

After you click it a window **Graph setup** will appear (*Figure 6.4*). Here you can modify individual displayed channels. We can choose what parameter will each channel represent using dropdown lists (*1*). Using checkboxes (*2*) next to each channel we select which ones will be shown. The color of each graph can be also chosen (*3*). To exit the menu, press Cancel button (*5*). To apply your changes, click the **OK** button (*4*). Finally, the graphs of measured waveforms are displayed (*Figure 6.5 - 2*).

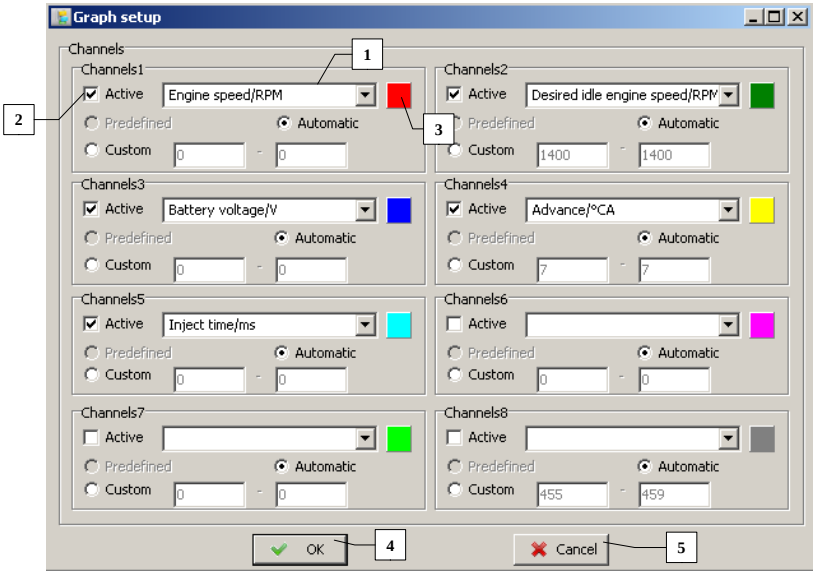


Figure 6.4

If you want to make the waveforms smaller click the button (*4*), to enlarge them press (*5*). If you want to modify the settings again, click the (*3*) button (*Figure 6.5*).

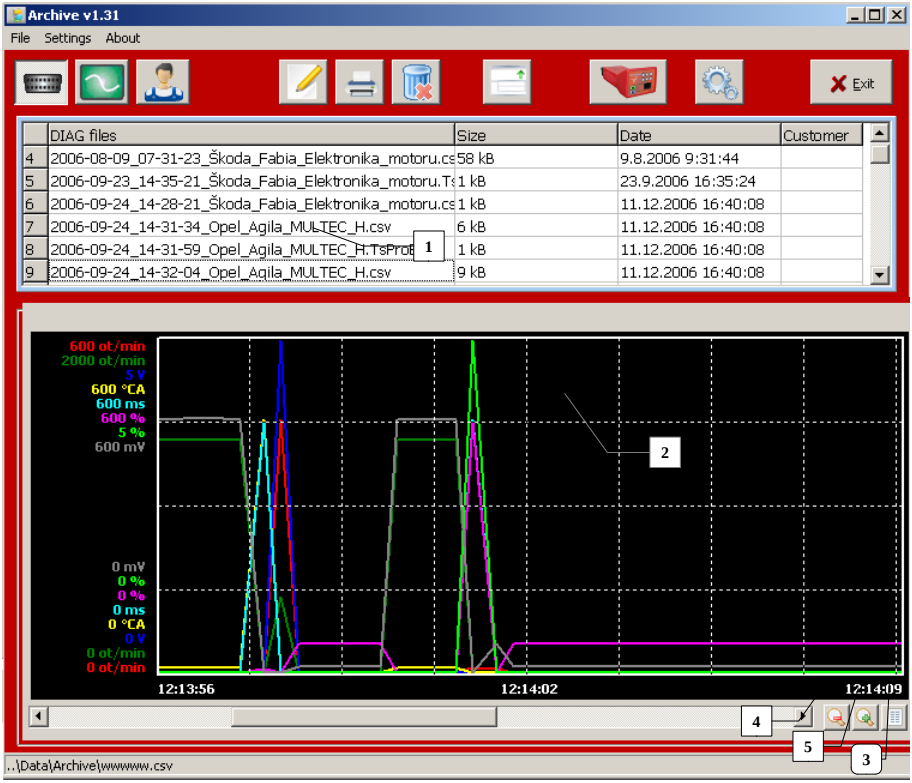


Figure 6.5

Customer database

If you want to work with the database of your customers, click on the third icon from left (*3*). The window is divided into three parts (*Figure 6.6*). There is a list of customers in the first part (*1*), containing their ID, name, vehicle type, license plate and address. In the second part (*2*) you can find the list of records from oscilloscope or diagnosis database (the type of the selected database is highlighted (*Figure 6.6*)) assigned to a selected customer. The third part of the window (*3*) shows the content of the record selected in the second window. The items in this third window can be also sorted in the same manner as the oscilloscope and diagnosis files.

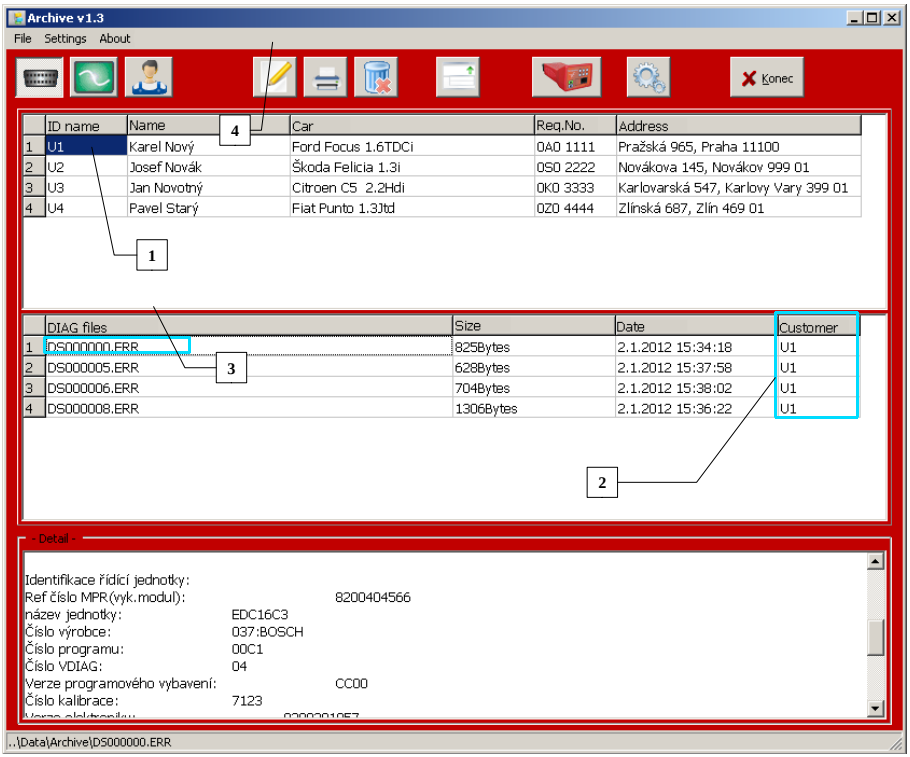


Figure 6.6

You can change customer details by double clicking on a customer record. A new window with detailed informations appears (*Figure 6.7*). In this Customer details window you can change all the informations about the customer. The changes are applied by clicking the Save changes button. To create a new customer record, click on the New customer icon (*2*). A blank Customer details window appears. After you fill in the informations you want, click on the Save changes icon (*1*). A new entry appears in the customers list.

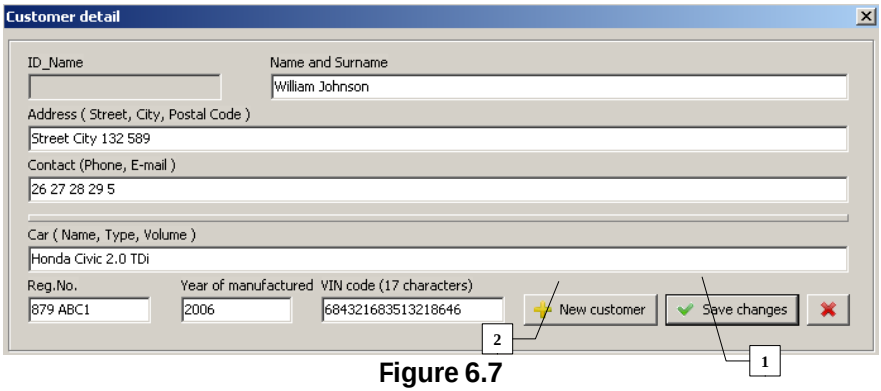


Figure 6.7

Records modification

Saved data can be modified after clicking on the Modify file icon (*Figure 6.6 - 4*). You can alter or add informations about any saved oscilloscope or diagnosis file. The file´s name, measurement description and customer assignment can be changed. Changing file name is done in the window (*1*). You can write file´s new name here and by clicking Rename! (*4*) the name is changed. Changing or adding of a measurement comment is done in the window (*2*) following the same procedure as in renaming file. The window (*3*) is designed for changing customer assignment. To assign a new customer to the record, click on his or her name in the list and click on the Change customer icon. If you want to remove an assignment, click on the sign NOT ASSIGNED (highlighted on *Figure 6.8*). If you don´t want to do any changes anymore, click the Back icon (*6*).

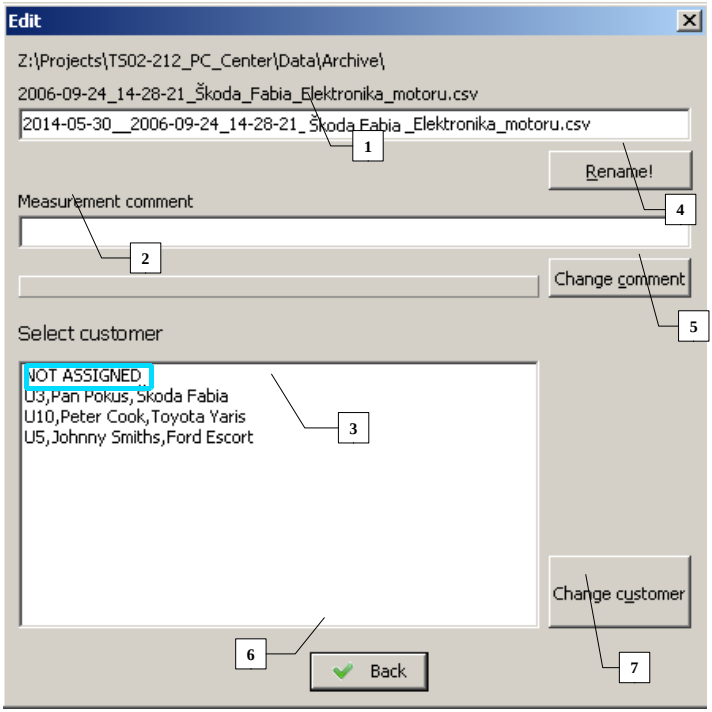


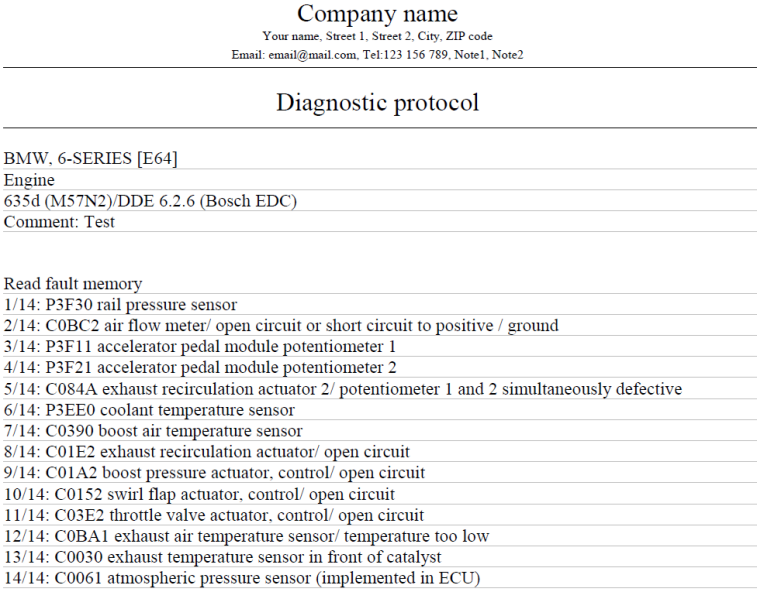
Figure 6.8

Deleting records

To delete any record, find it in it´s database, mark it by clicking on it and then click on the sixth icon from left - Delete file (*Figure 6.2 - 5*). A dialog window with warning appears; here you can confirm deleting or abort it. **If it is confirmed, the file is permanently deleted.**

Printing diagnostic protocols

Diagnostic protocols can be printed from diagnosis database only. First, you have to select the file you want to print by clicking on it, then click on the **Print icon**. A printer setting window appears; then by clicking on the **OK icon** the protocol is printed. You can find an example of such a protocol on the *Figure 6.9*.



Company name

Your name, Street 1, Street 2, City, ZIP code

Email: email@mail.com, Tel:123 156 789, Note1, Note2

Diagnostic protocol

BMW, 6-SERIES [E64]
Engine
635d (M57N2)/DDE 6.2.6 (Bosch EDC)
Comment: Test

Read fault memory
1/14: P3F30 rail pressure sensor
2/14: C0BC2 air flow meter/ open circuit or short circuit to positive / ground
3/14: P3F11 accelerator pedal module potentiometer 1
4/14: P3F21 accelerator pedal module potentiometer 2
5/14: C084A exhaust recirculation actuator 2/ potentiometer 1 and 2 simultaneously defective
6/14: P3EE0 coolant temperature sensor
7/14: C0390 boost air temperature sensor
8/14: C01E2 exhaust recirculation actuator/ open circuit
9/14: C01A2 boost pressure actuator, control/ open circuit
10/14: C0152 swirl flap actuator, control/ open circuit
11/14: C03E2 throttle valve actuator, control/ open circuit
12/14: C0BA1 exhaust air temperature sensor/ temperature too low
13/14: C0030 exhaust temperature sensor in front of catalyst
14/14: C0061 atmospheric pressure sensor (implemented in ECU)

Figure 6.9

Loading data from Troodon interface

First you have to make sure that the TSPro is connected to the PC properly. Then click on the eighth icon from the left - **Show dialog for loading from the device** (*Figure 6.2*). A new Files window appears in device (Figure 6.10). Now you have to select whether you want to download data from **Archive**

(diagnosis) or Scope (oscilloscope). Then after clicking on the **Check files in device** a list of saved measurements appears (*Figure 6.11*).

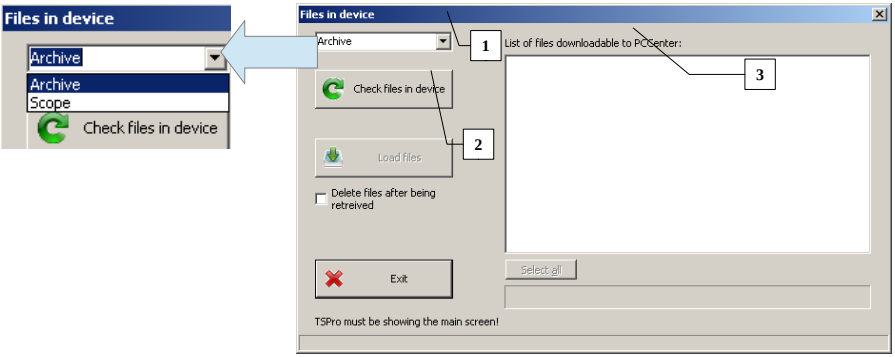


Figure 6.10

We have to select desired records either by clicking in the boxes next to them (*4*), or you can click on the Select all icon (*5*). Then proceed to the data transfer by pressing the Load files icon (1). The transfer is indicated in the lower part of the window (*6*). If you click on the box Delete files after being retrieved (*2*), the transfered files will be deleted from the device. The loaded files are daved in a directory defined in the Settings window.
After the loading finishes, close the window by clicking the **EXIT icon**.

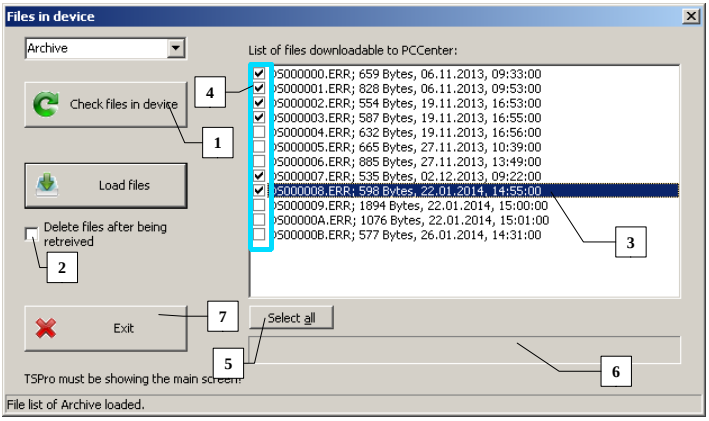


Figure 6.11

Program settings

In the Settings menu (*Figure 8.12*) we can find information about settings of the Archive program. There are information about the folders where the data is stored; they can be changed in the Settings menu in the MainBar menu.
One of the parameters that can be changed here is the size of the text in the Measurement details window. Click on the Save icon if you want to use new setting, or click the Default icon if you want to restore the default settings, or by clicking the X icon you can exit the settings window.

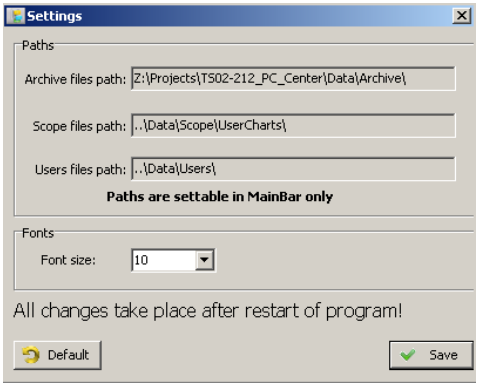


Figure 6.12

File

If you need to load the database from a different folder one time, we can Temporarily change DIAG/SCOPE files path in the **File** menu in the menu bar (*Figure 8.13*). After closing the Archive program, the paths are set back to the values from the Settings menu in the MainBar.

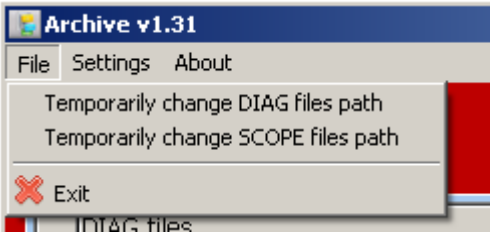


Figure 6.13

Settings

Because the list of your data can be very long if you wotk with the Troodon often, only data up to one month old are shown in the list by default. If you want to work with older data, you can change it in the **Settings** menu (*Figure 6.14*).

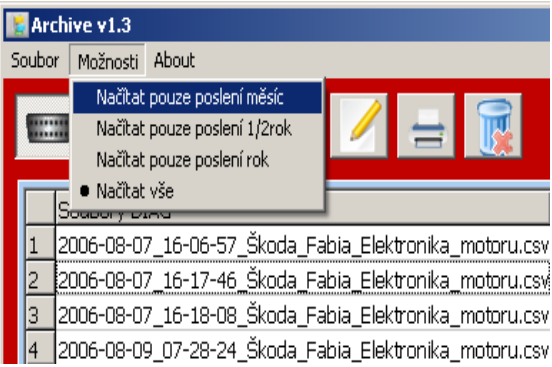


Figure 6.14

Exit

If you want to close the Archive application, click the Exit button or the icon in the upper right corner (Figure 6.2).

7

Appendix A

(OBDII and EOBD introduction)

In order to use the TSPro diagnostic device effectively you should understand the basic of OBD systems. Principles of the diagnosis are summarized in this appendix.

Introduction

The EOBD/OBDII is a uniformed diagnosis of motorized vehicles with emphasis on the emission behavior. Because there is lots of literature covering this theme, we will talk about it briefly.
EOBD´s main advantage is the possibility of using a universal test device for all vehicles equipped with this interface. This universal diagnostic device can therefore be used for diagnosing any vehicle with the EOBD/OBDII system regardless it´s manufacturer. This is especially useful for unofficial services which work with vehicles of different manufacturers.
The diagnostic device must be able to communicate in two different modes: ISO and SAE. The ISO mode is used by European manufacturers and the SAE by Asian and American ones. The diagnostic device must distinguish in which mode the vehicle communicates.
4 different protocols are used for transferring data. most European manufacturers use protocol ISO 1941-2, but some use 14230-KWP2000. American manufacturers prefer a SAE J1850 protocol. Nowadays, a CAN protocol us used more and more frequently.

The OBDII diagnosis is mandatory for USA´s petrol engine manufacturers from 1995 and for diesel engines from 1996; EOBD is demanded by EU directive 98/69/ES.

The control unit must check the individual systems. Frequency of the checks depends on the system´s importance and they are divided into permanently or occasionally checked systems.

Permanently checked systems

- Misfires
- Electrical test of the emission-relevant components
- Fuel system

Occasionally checked systems

Because some systems can be tested properly only under certain circumstances, they are tested only sporadically.

- Secondary air system
- Catalytic converter
- Lambda probes and their heating
- Emission gases recirculation
- Venting of the fuel tank and leaks

Readiness code

One of the control unit´s features is indicating the testing readiness of individual modules. It indicates whether the control system supports individual diagnostic procedures and if the tests can be performed or not.
The readiness code contains two information (Chart 9.1). The first value indicates which systems are checked or tested by the control unit. The second one specifies which systems have been successfully checked. However, the readiness code doesn´t contain the results of the tests; they have to be read out of Fault codes. Unfortunately, it is necessary to know all the readiness codes in order to perform complete diagnostics, which requires a fairly difficult test drive.

Bite number	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
Test supported	0	1	0	0	1	0	1	0	1	1	0	0
Test not performed	0	0	0	0	0	0	0	0	0	1	0	0
	Misfires	Fuel systém	Overall components check	Not used	Catalyst	Catalyst heating	Vaporisation systém	Secondary air systém	Cooling systém	Lambda probes	Lambda probes heating	Flue gas reduction

Chart 9.1

Test Modes

Independently on used protocol, data must be listed in 9 specified Test Modes (or just Modes). Modes 1 to 9 are used for emission analysis and can be used for diagnosis purposes as well.

Request current powertrain diagnostic data - mode 1

In this mode there are various information about system condition, measured values of analog and digital inputs and outputs, values computed by the ECU, number of failures stored in the ECU memory etc. Values relevant to engine emission measurements as well as readiness codes are presented.

Request powertrain freeze frame data - mode 2

This mode retrieves certain data that was saved at the time the vehicle set a diagnostic trouble code (DTC). If other failure occurs with higher priority, running conditions will be overwritten with newer ones. Failures related to fuel mixture regulation and ignition misfiring are considered to be of highest priority. Up to six running conditions parameters are stored with one error code.

Request emission-related powertrain diagnostic trouble codes - mode 3

The error memory is usually divided into two parts. If the failure occurs for the first time it is saved in the Pending error memory. It is moved to the Confirmed error memory after it is identified and verified. After confirmation the MIL error indicator on vehicle´s dashboard starts to shine.

If the diagnosed failure doesn´t appear in three following driving cycles, MIL is turned off. After another forty engine start-ups the failure is deleted from the memory.

The principle of decoding is shown in chart 9. 2. The TSPro diagnostic device automatically performs decoding of each code to significantly reduce time

needed to perform diagnostics.

P	0	1	2 3
System	Standard	Localization	Type
P Powertrain B Body C Chassis U Undefined	0- error codes according to norm (OBD-codes, required from all manufacturers.) Other codes are chosen by manufacturers.	0 – general 1 – mixture preparation /secondary air system 2 – fuel system 3 - ignition 4 – additional sys. /emission regulation 5 – speed and idle regulation system 6 - input/output signals, ECU 7 - gearbox	Component identification (01 - 99 = system parts), specified failure causing failure or affecting component function signal error etc.

Chart 9.2

Clear/reset emission-related diagnostic information - mode 4

Mode 4 clears the memory of all systems. In other words it clears powertain DTC memory (mode3), running conditions memory (mode 2), oxygen sensor test results memory (mode 5) as well as confirmation of test performed on non-continuously tested systems.

Request oxygen sensor monitoring test results - mode 5

Results of tests of oxygen sensors are reported in mode 5 (values are often obtained from tests in mode 1). Reports are sorted according to test Ids, ie. Threshold voltage lean-rich mixture etc. Mode 5 can be used during emission tests when not all readiness codes are known.
In figure 1 you can see a photo of an oxygen sensor. In the following figure 2 the values of voltages on oxygen sensors during measurement are displayed.

Figure 9.1

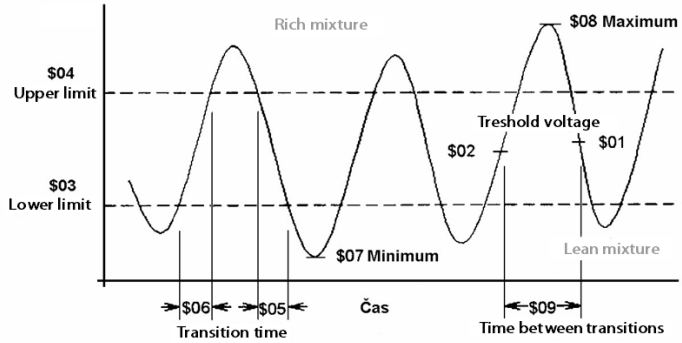


Figure 9.2

Request on-board monitoring test results for continuously monitored systems - mode 6

Mode 6 is used to load pending errors memory. ECU must confirm their status in following driving cycle, and if appropriate, move them to the confirmed error memory. Although this mode is not used to diagnose emissions, their results are important for diagnostic. The codes are similar to mode 3.

Request on-board monitoring test results for non-continuously monitored systems - mode 7

This mode is not defined by norm and is specified by each manufacturer independently. Moreover, it is not supported by all ECUs.

Request control of on-board system, test or component - mode 8

This mode is also specified by each manufacturer. It is meant to be used for special tests such as driving actuators tests etc. It is not widely spread.

Request vehicle information - mode 9

Even this mode is specified by each manufactured differently. It contains VIN (vehicle identification number), CIN (calibration identification number) and CVN (calibration vehicle number) codes.

OBD socket

The position of the EOBD or OBD-II diagnostic socket, it´s shape and pinouts must adhere to a norm.

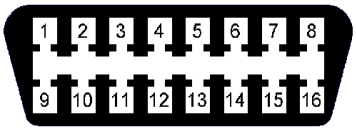


Figure 9.3

The unified diagnostic socket (often referred to as a CARB connector) has 16 pins; it´s schematics is displayed in Figure 9.3 and pinouts are summarized in chart 9.3.

Pin	Used for
7 and 15	Data transmission according to ISO 9141-2 or ISO 14230 (KWP2000) norms
2 and 10	Data transmission according to SAE J 1850 norm
4	Vehicle ground
5	Signal ground
6 and 14	CAN bus (ISO 15031-3)
16	Battery positive

Chart 9.3

Pins listed in the chart have exact function and must be implemented according to the norm. Other pins (ie. 1,3,8,9,11,12,13) can be used for other purposes and manufacturers often assign them different diagnostic functions.

8

Appendix B

(diagnostic dictionary)

In this chapter we will focus on explaining some terms you can meet while diagnosing control units. Incorrect understanding can lead to, for example, incorrect interpretation of failure codes and consequently in wrong repairing procedure.

- **+apc**. Battery power supply
- **adaptation** readjustment of, for example, engine regulation parameters according to ambient conditions
- **anomaly** abnormality, deviation
- **control deviation** the difference between actual and requested value
- **deceleration** slowing speed
- **drift** shift, displacement, slow change caused by changing conditions such as temperature change
- **checksum** a checking sum which serves to ensure the validity of data in the memory of the control unit
- **IMA code** calibration number of an injector
- **impedance** **Electrical impedance** is the measure of the opposition that a circuit presents to a current when a voltage is applied
- **initialization** opening value setting
- **coherence** a logical, orderly, and aesthetically consistent relationship of signals
- **incoherence** discontinuity, disparity (see coherence)
- **correlative** mutual relation between two values; if one of them changes, the second changes too. It helps the control unit localize the failure.
- **correction** modification, expressing the deviation from the default values, such as the duration of the injection correction
- **oxygen probe** see lambda probe
- **lambda probe** a sensor of the amount of oxygen in exhaust gases
- **random failures** an error that appears unpredictably
- **O2 probe (sensor)** lambda probe
- **offset** change/shift of signal value against the reference value
- **proportional regulator** a type of regulator which changes it´s value accordingly to the action value
- **reinitialization** to initialize again
- **occasional failure** sporadic error

9

Appendix C

(Technical parameters)

Součástí této části uživatelské příručky je popis parametrů diagnostického zařízení interface Troodon.
V této kapitole je rovněž zmíněno požadované hardwarové a programové vybavení pro provoz dodaného software.

Technical parameters of the Troodon diagnostic interface are listed in **Chart 9.1**.

Operating temperature	-10 - 40°C
Storing temperature	-10 - 40°C
Connectors	OBD II 16 pins RJ45 and USB for PC connection
Dimensions	147 x 46 x 61 mm
Power	over the OBD II connector or partially over the USB (only some functions)
Power consumption	3 W
Cover	P44
Mass	175 g

Chart 9.1

PC requirements

The TSPro device supports communication with personal computers. Your computer must meet following parameters in order to work properly:

- MS Windows 2000/XP/Vista/7/8
- Intel Pentium compatible processor
- Frequency 1.5 GHz or more
- RAM 2GB or more
- A graphic card with proper drivers
- Monitor with 1024x768 resolution, color depth 32bits
- Network card 100Mb/s

One can say that the TSPro PCCenter runs on any today´s computer. We recommend to use it on computers with operating system Windows XP or 7.
Program Adobe reader is needed to view the manual included on the installation CD. It is included on the CD and can be also downloaded from www.adobe.com.

10

Appendix D

(Warranty conditions, service)

In the last chapter you can find warranty and service conditions for your device.

Warranty terms and conditions

These are manufacturer´s general warranty terms and conditions, which apply in the Czech Republic. Laws of the county of purchase apply if there is a conflict between them and the warranty terms and conditions.

Any part of the TSPro device will be repaired or replaced for free if you find it damaged or badly assembled at the time of purchase. The device itself is covered by the warranty in matters of material defects and montage quality only.

Contact your reseller if you believe that the device was working properly at the time of purchase and the fault has become evident during the warranty period. Both the manufacturer and the reseller believe in the quality of our products and will do our best to make you satisfied.

Warranty restrictions

The following cases are not covered by the warranty:

- minor faults or deviations in the quality of a product which do not affect the product's value or fitness for its intended purpose
- rechargeable and disposable batteries (these products have a shorter service life, the length of which also depends on the frequency of use)
- faults resulting from improper use (e.g. operating errors, mechanical damage, incorrect operating voltage) Proper use for the purposes of this warranty is defined as use of the product under the conditions stated in the instructions for use.
- faults due to wear and tear
- any modification of Devcom products effected by you or a third party, unless Devcom has given its prior written consent to the nature and extent of the modification

The reseller

The reseller / distributor from whom you have purchased the product is the first one who you should ask to accept your warranty claim. He or she identifies the fault and either proceeds it to the manufacturer or repairs it himself. You should contact the manufacturer only if you can not contact your reseller.

Warranty disclaims

The warranty covers products, devices and items made or sold by the Troodon spol. s r. o. only. The manufacturer is not responsible for any damage caused by using it´s products. The user accepts and takes over all responsibility of any arising consequences. Manufacturer´s responsibility can never exceed the selling price paid for the product.

Warranty and after-warranty service

Warranty and after-warranty service is provided by:

Trodoon spol. s r.o.
Pelušková 1402
PRAHA 9 198 00
info@eobd.cz
+420 284 860 938
www.eobd.cz
Czech Republic

Licence conditions

The software installed both in the Troodon interface and PC (PC Center) is property of the manufacturer and is protected by copyright and other laws. The software product is not being sold, you are only granted one licence to use. The licence is issued for individual device´s serial number. It is forbidden to change, modify or decompile the software, perform a backward analysis of it or make any derived work.

How to ship products to the service

First call or e-mail your distributor or the manufacturer. The device may be working properly, and it was only not used properly. One e-mail or call with us may solve anything!

While sending the device to be serviced, do not forget:
-copy of a purchase certificate
-your address
-a telephone number where you can be contacted during work hours
-e-mail address
-detailed description of the problem

Packaging

Advices you can find below may help you save shipping costs, reduce the risk of additional damage and will help our technicians process the service.

Do not send batteries, manuals and other accessories, except you are asked by the technician to do so. You will save shipping costs and it cannot be lost during shipping. The manufacturer is not responsible for lost of unsolicited accessories.

Insure the device for the price of a new one. The manufacturer is not responsible for lost of the device during shipment.

Pack the device carefully and safely in a solid box not much bigger than the

device. Make sure it can not move around it, but please avoid shredded paper and very small pieces of polystyrene; if you have to use it, wrap the device into a plastic bag.

Please enclose your description of the problem, as well as your address, telephone number or e-mail address so our technician can contact you. The more detailed the description is the faster we can repair it.

Certificate of compliance - CE

This a certificate of compliance, issued according to §13, paragraph 2, 22/1997; 71/2000 and §7 169/1997 (Czech Republic laws). You can find the whole document in Czech at www.devcom.cz.

Manufacturer: Troodon spol. s r. o. IČO 24809772
hereby confirms that:
This equipment in combination with our accessories complies with the requirements for CE marking when used in a residential, commercial, vehicular or light industrial environment, achieving all the appropriate provisions of the relevant legislation in the EU.

Testing institute:
TESTCOM, IČO 00003468
Protocol number: 23/06

These harmonized Czech technical standards were used when assessing the compliance:
ČSN EN 61000-2-2:2000, ČSN EN 61000-4-2:1997, A1:1999; Z1:2001, ČSN EN 61000-4-3:1997; A1:1999; Z1:2001, ČSN EN 61000-4-4:1997, Z1:2001, ČSN EN 61000-4-6:1997, Z1:2001, ČSN EN 55022:1999 class A

Warranty Certificate

Article	interface Troodon
Production number	
Dispatch date	
Dispatched by	
Warranty	24 months
Sell date	
Distributor	
User/Holder