GuardMagic
MONITORING GUARD NAVIGATION

GuardMagic DLLS-DLLE Programming Tool

2011

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1. INTRODUCTION

"GuardMagic DLLS-DLLE programming tool" is the special technological complete set intended for programming and change the setting of **GuardMagic DLLS** and **GuardMagic DLLE** fuel level sensors by Personal Computer.

"GuardMagic DLLS-DLLE programming tool" utility allows calibrate vehicle main fuel tanks and cargo tanks. Fuel tank calibration procedure is carried by Notebook (Personal Computer) in vehicle.

2. PACKAGES

Complete set consist of:

- Program "**GM DLLS-DLLE PT**" – 1CD;
- GuardMagic SCA (DLLS Sensor Calibration Adapter);
- USB cable;
- 485 interface cable;
- 220/12V AC/DC power adapter with cable (for connection to GuardMagic FSM);
- User manual.

3. SYSTEM REQUIREMENTS

System requirements to the PC:

- MS Windows XP, MS Windows Vista, MS Windows 7;
- Intel Pentium IV 600 or above (or AMD analogue);
- Main memory 256MB or above;
- 10 free space on a hard disk;
- Mouse and keyboard;
- USB port;
- Video adapter and color monitor with the resolution not less than 800 x 600;
- CD or DVD ROM.

4. FUEL LEVEL SENSOR CONNECTION

Before starting programming or calibration procedure of fuel level sensor it is necessary to connect it to the personal computer using GuardMagic SCA adapter, and check the connection status.

4.1. Connect SCA Adapter to Digital Fuel Sensor (DLLS) and PC accordingly with Figure 4-1 or Figure 4-2.

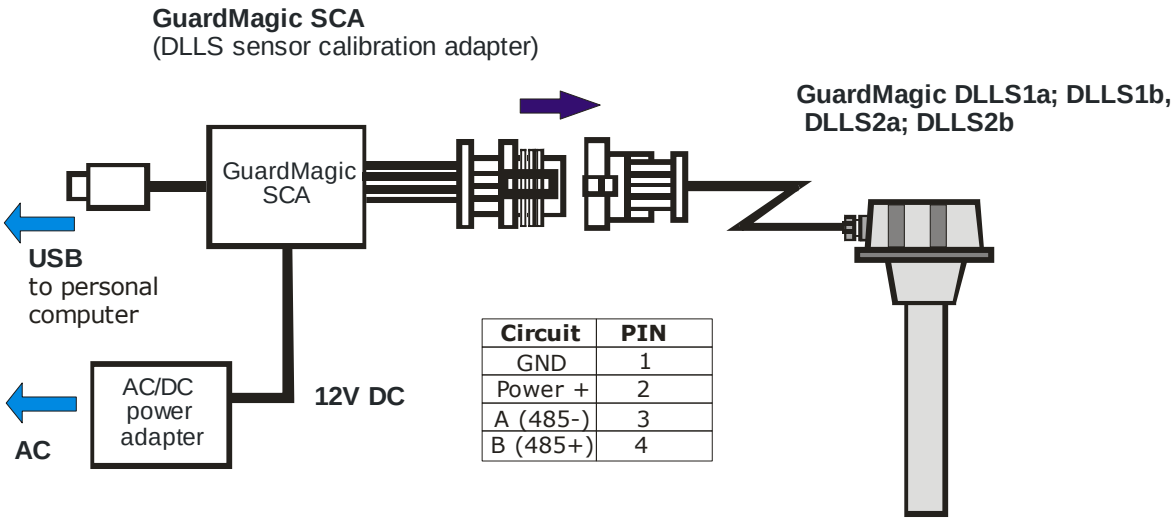


Figure 4-1: SCA Adapter connection with DLLS1a, DLSS1b, DLLS2a or DLLS2b

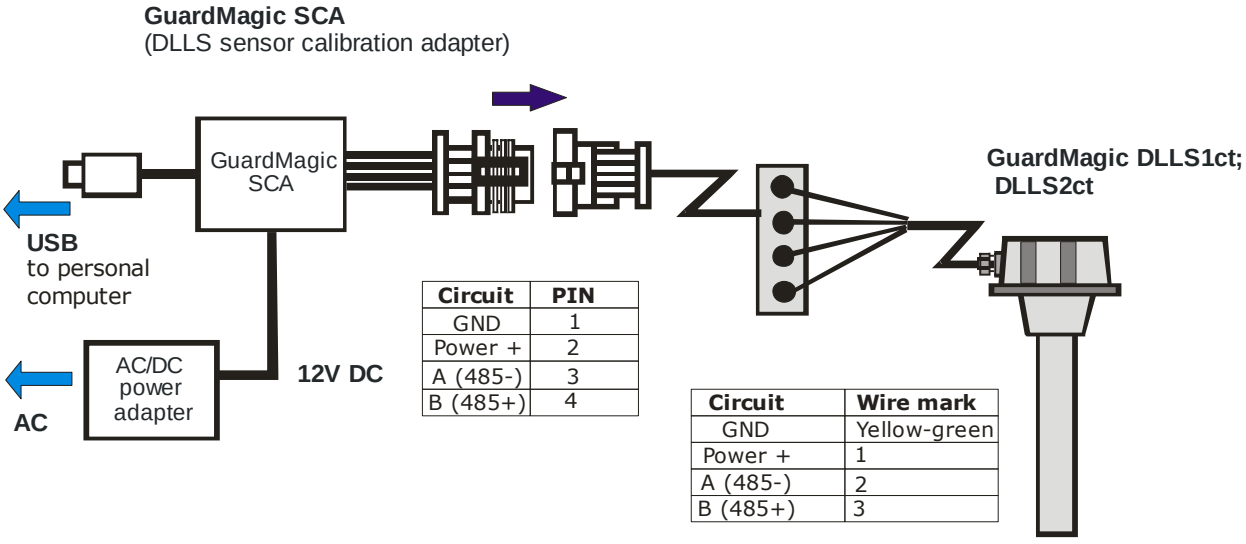
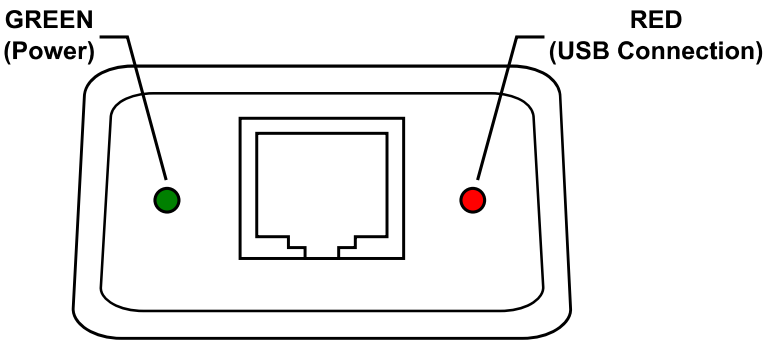


Figure 4-2: SCA Adapter connection with DLLS1ct, DLLS2ct

4.2. Check the LED status.


GREEN
(Power)
RED
(USB Connection)

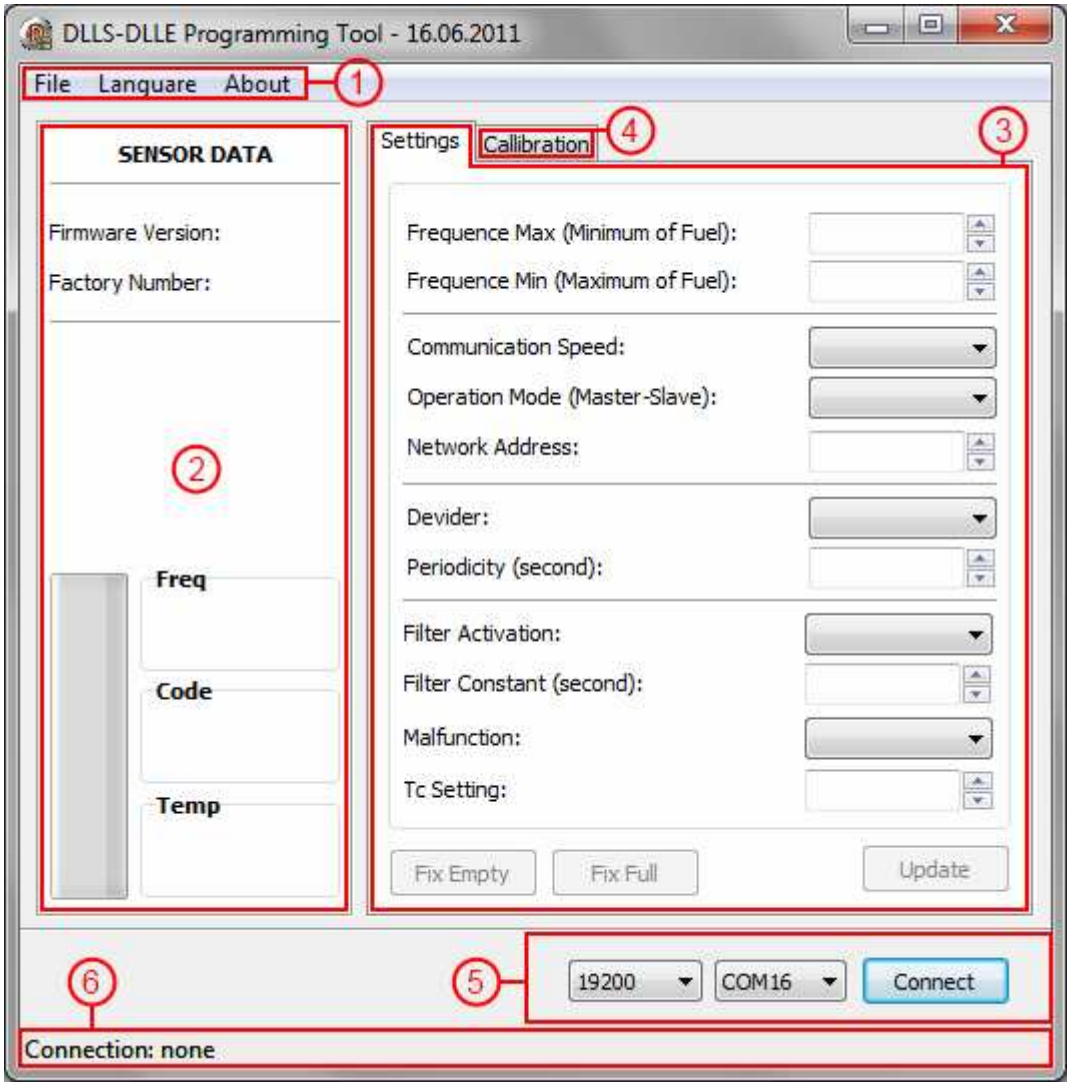
5. DLLS-DLLE Programming Tool software overview

Copy program “GM DLLS-DLLE PT” (FSProgrTool.exe) from CD to hard disk of yours PC.
Start the program “GM DLLS-DLLE PT” (FSProgrTool.exe). After start the program on the screen will open the basic form, shown on figure.

5.1. Software Overview

The “GM DLLS-DLLE PT” form consist of:

1. text menu;
2. "sensor data" part;
3. "settings" tab;
4. "calibration" tab;
5. connection settings and "Connect" button;
6. status bar.

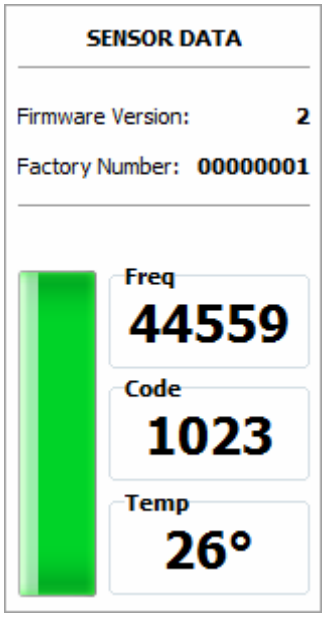


5.2. File Menu

File menu consists of the menu line with following items:

File Menu	Function Description
File	
Language	Choice of the working language
About	Information about the program

5.3. Sensor Data



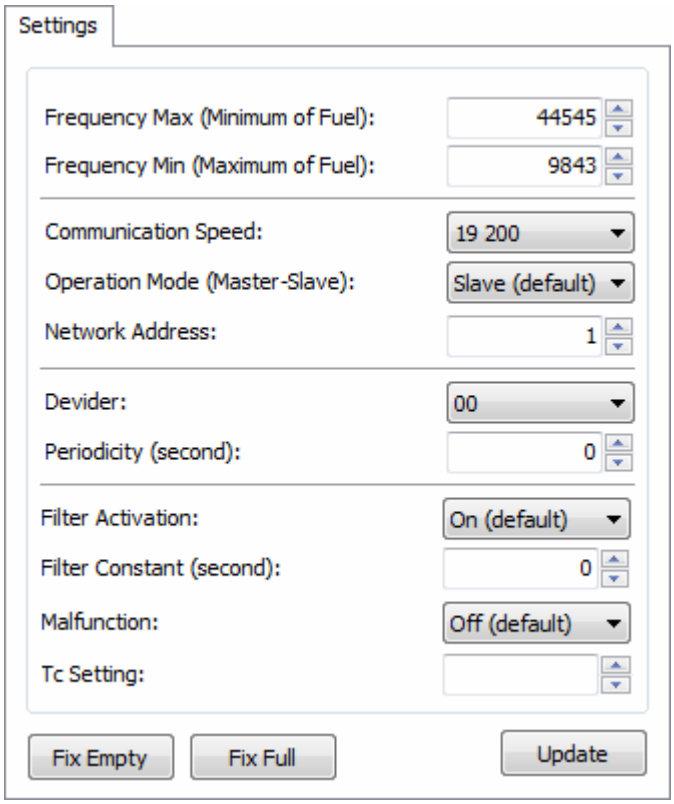
Show sensor data:

Item	Function Description
Firmware Version	Fuel sensor firmware version
Factory Number	Fuel sensor factory number
Freq	Current frequency
Code	Current fuel level code
Temp	Current temperature
Fuel Meter	Shows current fuel level in the fuel tank

Frequency value and code value will change on fuel level change.

5.4. Tab "Settings"

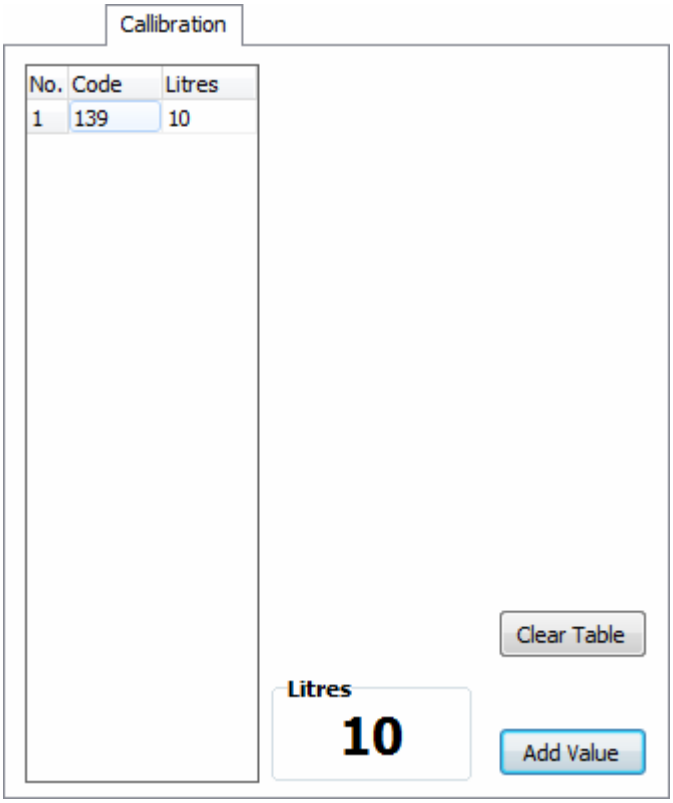
The tab "Settings" is intended for the programming of fuel level sensor parameters.



Item	Function Description
Frequency Max	Frequency of minimal fuel level in the tank
Frequency Min	Frequency of maximal fuel level in the tank
Communication Speed	Communication speed with which the fuel level sensor works (19 200, 38 400, 57 600)
Operation Mode	Fuel level sensor operational mode (Slave - network mode, Master - stand alone mode)
Network Address	Fuel level sensor network address (available addresses - 1..23)
Divider	Select the value of sensor length which sensor you are using
Periodicity	Periodicity of data sending in “Stand Alone” mode (available values - 0..255)
Filter Activation	Activation of internal fuel filter
Filter Constant	Constant of filtration
Malfunction	Malfunction bit sending activation Some main modules can not support this functionality

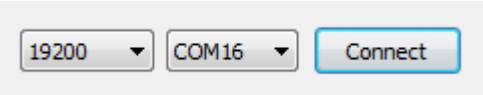
Tc Setting	Calibration sensor internal thermometer. Set one temperature point.

5.5. Tab "Settings"



Item	Function Description
Calibration Table	
Clear Table	Clear Calibration Table
Liters	Fuel level value in liters
Add Value	Add current fuel level code and corresponding to it fuel level value

5.6. Connection settings and "Connect" button



Item	Function Description
Connection Speed	Fuel level sensor working speed (available values - 19200, 38400, 57600)
RS232 port number	Number of RS232 port to which fuel level sensor is connected
Connect / Disconnect	Connect or disconnect to the fuel level sensor.

5.7. Status bar

Status bar is intended to show connection status. After connecting to the fuel sensor information about COM port number and connection speed is shown in the status bar.

6. PROGRAMMING PROCEDURE

The fuel level sensor programming procedure is consistently completing the required fields on the persistence and saving entered data.

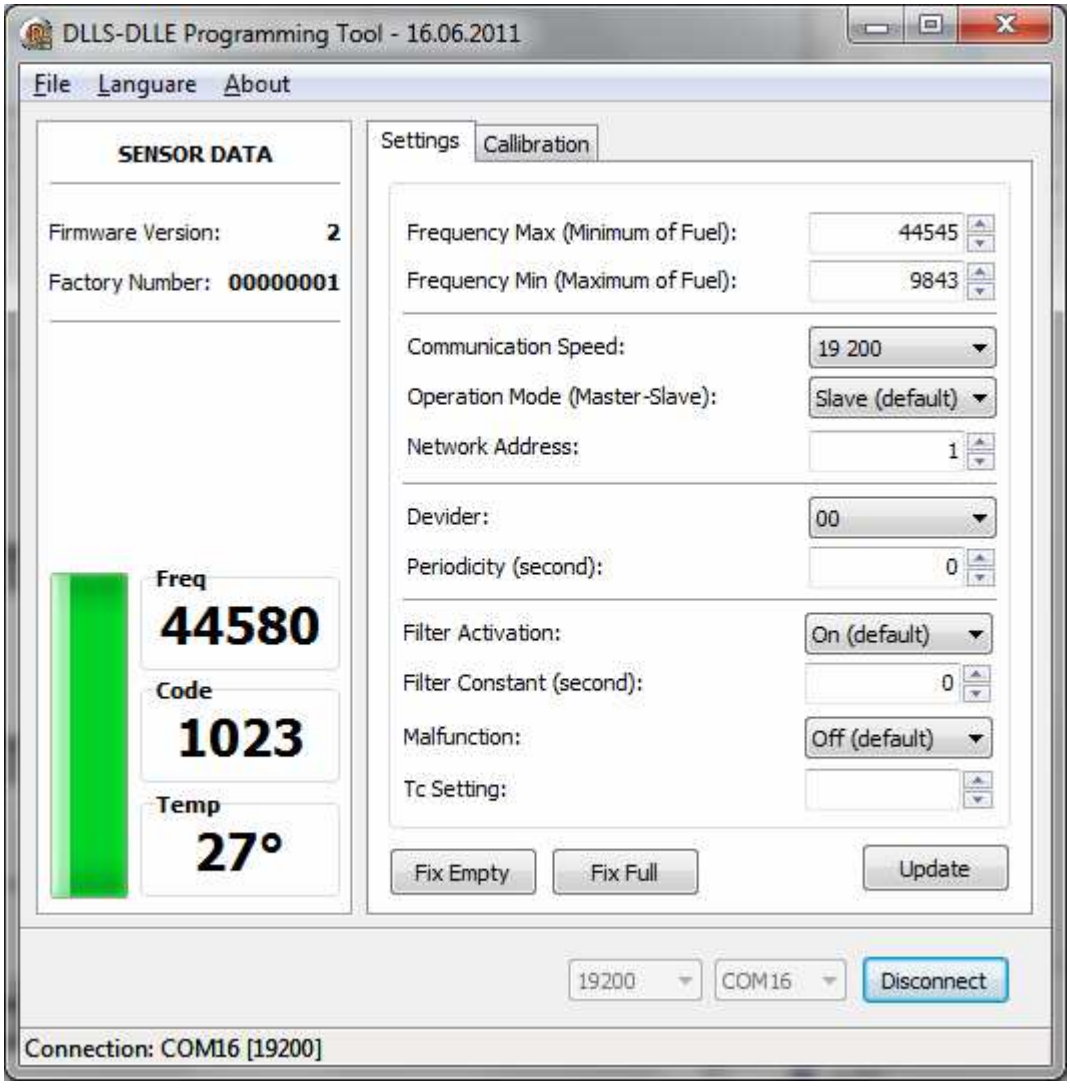
For the data saving it is necessary to push button “Update”.

6.1. Primary fuel sensor calibration

Attention!!! Sensor adjustment should be provided with the same fuel type equal to the vehicle´s or machine operation fuel.

The DLLS, DLLE sensor scale should be adjusted after tube cutting. «**DLLS-DLLE Programming Tool**» software makes it.
Connect the sensor to PC by special 485 adapter (for example, **GuardMagic SCA adapter**).

Start “**DLLS-DLLE Programming Tool**” software. After starting the main window will be shown.



Primary fuel sensor calibration steps

1. Select necessary "Communication Speed", "RS 232 Port" and press the button "Connect"

2. Put the sensor tube completely into the fuel, **pull out Sensor from the fuel,** wait for about 2 minutes, and then press “Fix Empty” button.
3. Put the sensor again completely into the fuel, wait for 2 minutes, and press “Fix Full” button.

6.2. Working mode and address setting

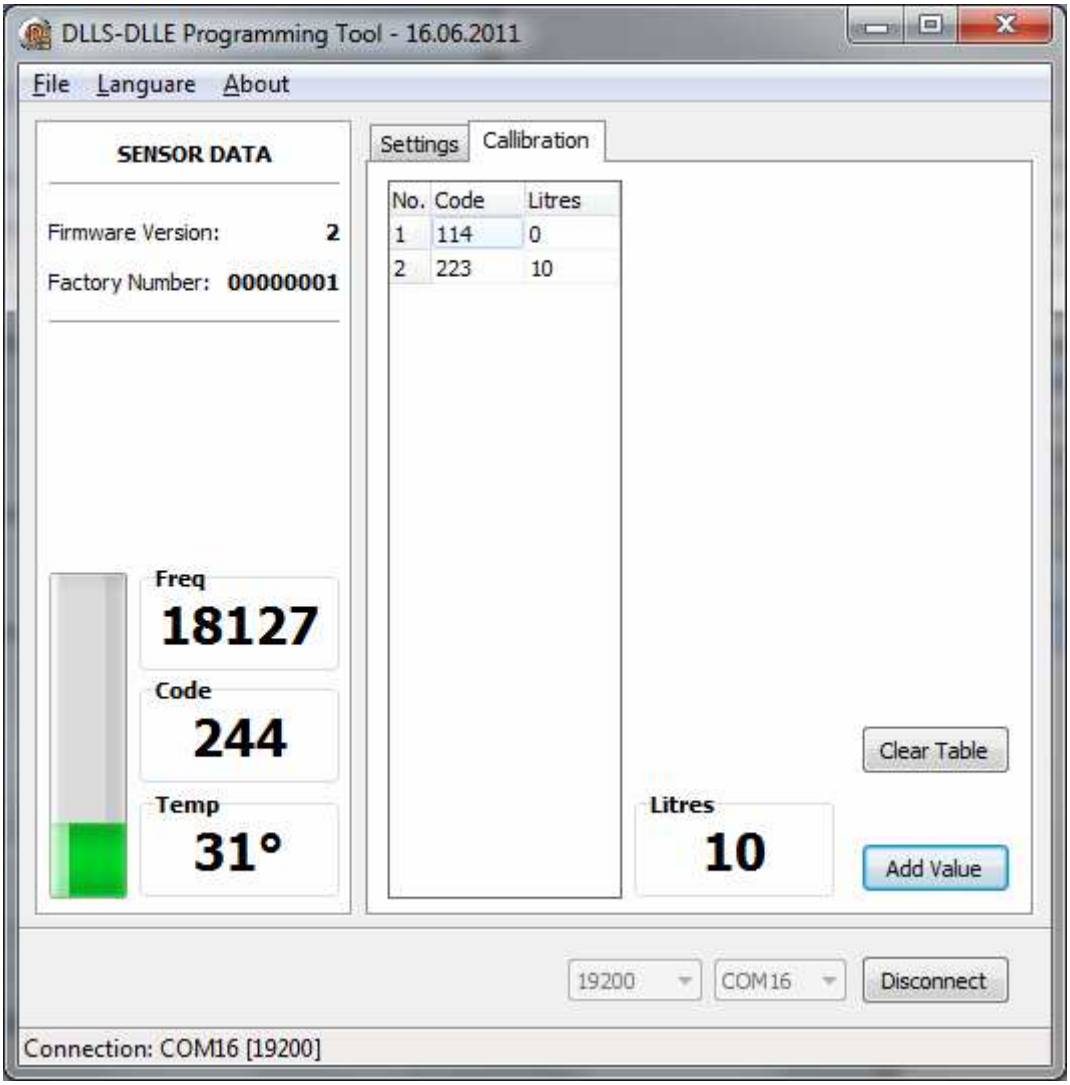
Working mode of Fuel Sensor and Sensor Address setting are carried out also by “**DLLS-DLLE Programming Tool”** software.
When program is running select necessary "Operation Mode" and "Network Address" and press the button “Update”.

7. FUEL TANK CALIBRATION

For fuel tank calibration it is necessary to select "Calibration" tab. See screenshot below.

Fuel Tank calibration procedure showing below is only for independently calibration without units GuardMagic VB, GuardMagic FSM, GuardMagic MTF3.

Fuel Tank Calibration procedure with units GuardMagic VB, GuardMagic FSM, GuardMagic MTF3 in detailed describe in this product installation manuals



7.1. PRINCIPAL PROVISIONS

Fuel tank calibration is consecutive fixing values of a level of fuel, which is filled in vehicle tank or tank trailer (regular or cargo), with the subsequent entering these data in the working program.

At carrying out of calibration operation it is convenient to take advantage of the form offered a calibration leaf p.7.4

As a measure of filled fuel is used the indicator of a filling station. Filling stations, as a rule, provide accuracy not worse 0,3 %. Code of filled fuel will be shown in calibration software.

At calibration procedure fuel is filled in with portions approximately on 1/10 - 1/20 volumes of a fuel tank. As a rule, carrying out of calibration need to be spent on 5 … to 15 control points.

Calibration procedure is carried out independently for each fuel tank and fuel level sensor.

7.2. ACTION ORDER OF CALLIBRATION PROCEDURE

Carrying out the operation of the calibration procedure is carried out in following order:

1. In a fuel tank of vehicle leave the minimal possible fuel level. This fuel level will be considered as MINIMAL level (like 1 liter); no more than 1%... 2 % of a tank volume;
2. Fix minimal value of the fuel by pressing “Add Value” button in program ("minimal fuel level" will be fix);
3. Insert a pistol of a fuel hose into a tank;
4. Add some control fuel to the fuel tank;
5. Wait till the value of the fuel level indicator in program will stop changes (field code). About 40 – 60 sec;
6. Enter the fuel level value in liters (field “Liters”). Press “Add Value” button;
7. Execute the indications of the previous paragraph till filling the fuel tank full with fuel.
8. Write down the table “fuel code” and “fuel volume” in the paper table.

In the future the values obtained for the calibration data table must be entered in the work program.