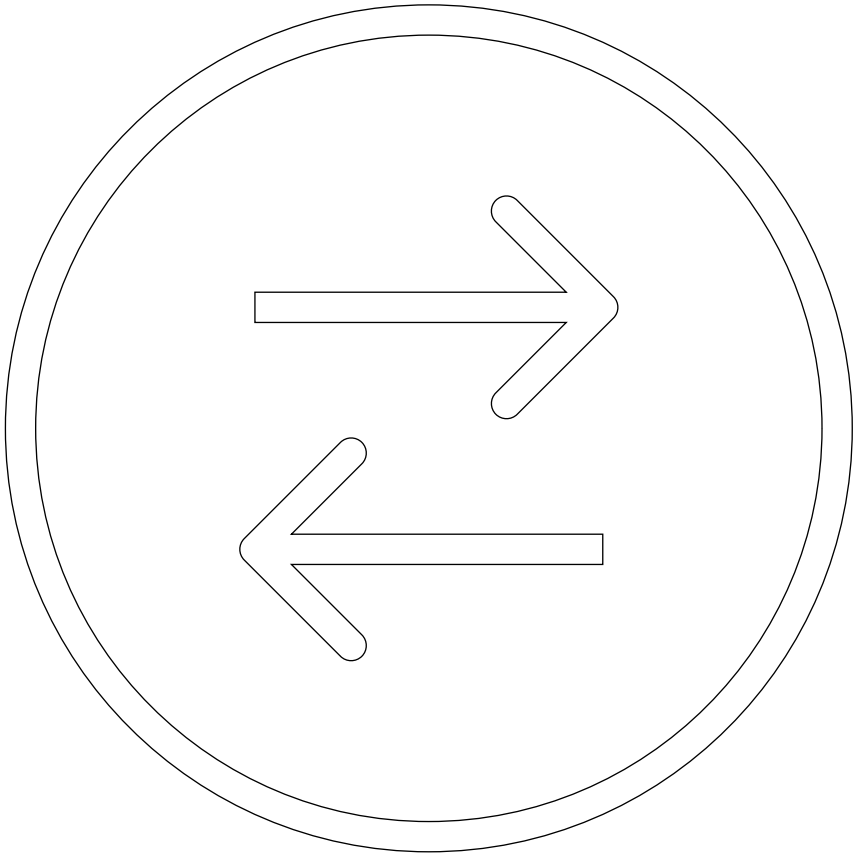
VRD Control Software

Vehicle remote diagnostics



User Guide

vrdiag
vehicle
remote
diagnostics

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About this document

This document covers a description of the interface and information on main functions of the VRD Control software. This guide is intended for VRD system's users.

Document Version	Issue Date	Modifications
1	16.06.2021	Creation
2	23.12.2021	Amendment

1. General

The vehicle remote diagnostics (VRD) system is a set of devices for remote electronic diagnostics of vehicles: trucks, cars and specialized vehicles (hereinafter collectively referred to as vehicles).

The VRD system includes VRD-Server device, VRD-Client mobile device and VRD Control software. For diagnostics, a diagnostic tool (communication interface, hereinafter referred to as the VCI, and dedicated software compatible with the diagnosed vehicle) is additionally used.

The system transfers diagnostic data between VRD-Client connected to the vehicle and VRD-Server connected to VCI. Data is transferred via Wi-Fi or mobile networks (through Internet). This allows a vehicle to be diagnosed remotely: the diagnostic technician and the diagnosed vehicle may stand at a distance from each other.

The VRD system is used to check errors that have occurred, correct faults or adjust parameters of the vehicle.

The VRD system is configured and controlled using VDR Control software.

1.1. System requirements

— CPU: Intel Core-i5 or better;
— RAM: min. 4 GB;
— Operating system: Windows 7, 8, 10;
— Minimum screen resolution: 1280 × 768;
— Dedicated Internet connection, min. 100 Mbps

Warning!
It is not recommended to connect a computer with installed VRD Control software to the Internet via Wi-Fi or any type of mobile networks. Connecting via a wired or optical connection is recommended to ensure stable and high bit rate Internet access.

1.2. Safety precautions

To prevent accidents or damage to the vehicle, VRD devices and/or VCI, please read this user guide and observe the following safety precaution when using the vehicle.

Do not diagnose the vehicle:
— Where mobile devices are not allowed;
— Near hospitals and medical centers since the working device may interfere with cardiac pacemakers, hearing aid devices or other equipment;
— In the area of blasting operations since the working device may interfere with these operations.

Make sure that the following requirements are met:
—The vehicle with the engine running is parked outdoors or in a well-ventilated area. Remember that exhaust fumes are toxic!;
— Transmission gear lever is moved to position P (Parking) for automatic transmission or to neutral for manual transmission. Make sure that the parking brake is engaged;
— Avoid water, fuel or grease on devices. Store and use the devices in a dry and clean area. Where external surfaces of the device are to be cleaned, use a clean cloth moistened with non-aggressive detergent solution;
— Adjust parameters when the vehicle is parked only.

Important! VRD-Client may transmit data via GSM, UMTS, LTE, Wi-Fi wireless communication links. These communication links may be unstable. It depends on mobile provider, his equipment, distance from the device to cellular base stations, interference, and objects between the base station and the device. The system does not affect the diagnostic process. The specialist is responsible for diagnostics performed.

2. Installing VRD Control software

Installing VRD Control software
Run setup file VRD Control Setup.msi and follow the installer's instructions.

Installing device drivers
To operate the device, install the drivers. Download the drivers using the link:

— Drivers for Windows 7:
https://www.silabs.com/documents/public/software/CP210x_VCP_Windows.zip
— Drivers for Windows 8, 10:
https://www.silabs.com/documents/public/software/CP210x_Universal_Windows_Driver.zip

Unzip the archive with drivers and run the installer:
— For 32-bit operating system: CP210xVCPInstaller_x86.exe
— For 64-bit operating system: CP210xVCPInstaller_x64.exe

Then follow the installer's instructions.

3. Overview of VRD Control software

3.1. Log in

The user is provided with a unique login and password to log in the VRD Control system (see Figure 1). After running the software, log in: enter login and password in the appropriate fields. Then click Log in.

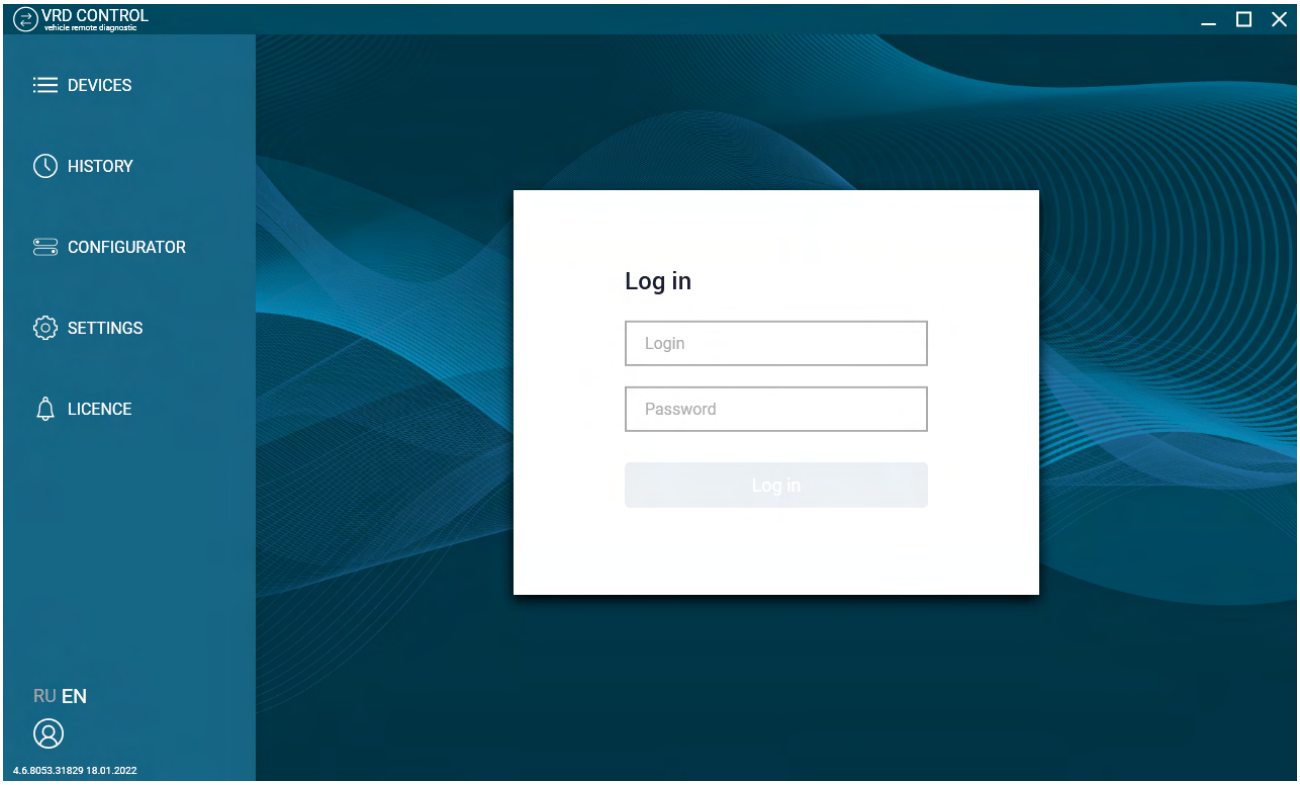

Figure 1 VRD log in

Important!
Login and password are provided when the VRD-Server device is purchased. If login information is lost, please contact client's service using the feedback form https://vrdiag.com/contacts

3.2. Software interface

After logging in, the user has access to software interface (see Figure 2) with main elements (see Table 1).

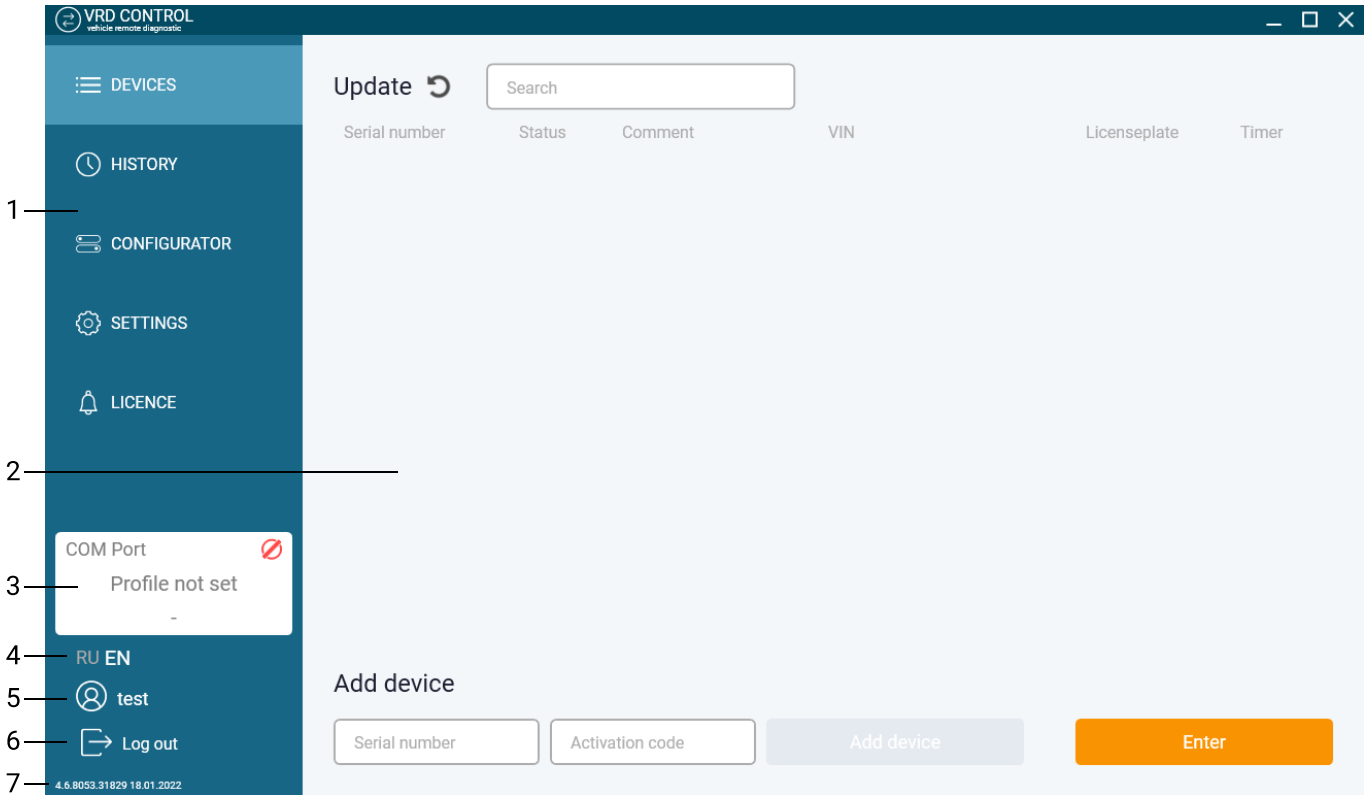

Figure 2 Software interface

Table 1. Main interface elements

No.	Name	Description
1	Control bar	Device control tabs
2	Work field	Helps to control devices
3	Information bar	Displays information on connected VRD-Server device, selected diagnostic profile and server
4	Select language	Helps to change the interface language
5	User name	Displays user login
6	Exit	Log out
7	Software version	Software version

4. Devices

The Devices tab allows the user to do the following:
— Add/delete VRD-Client devices;
— View the list of added VRD-Client devices;
— View and add additional information on VRD-Client devices;
— Update firmware remotely;
— Set/delete timer.

The work field displays the list of VRD-Client devices (see Figure 3) added to the account, and brief information on each device: serial number, server connection status, user comment, timer icon, delete device button.

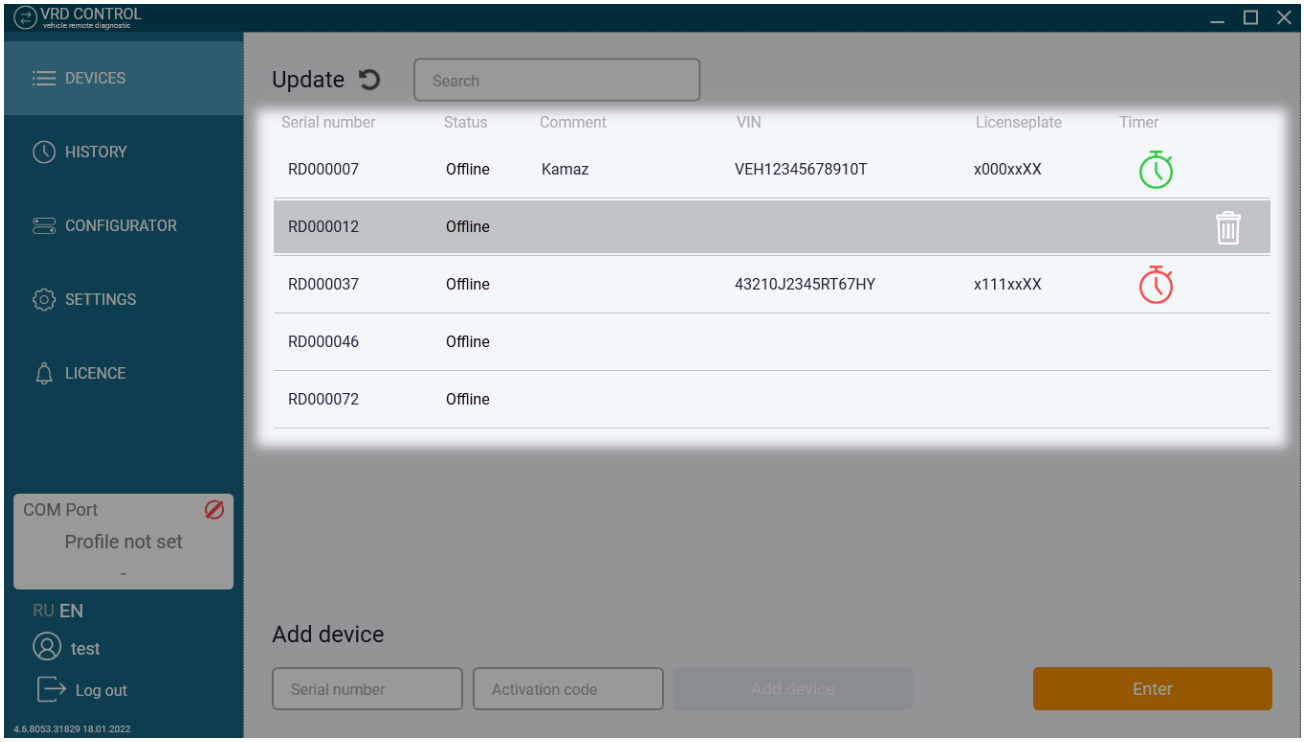

Figure 3 List of VRD-Client devices

4.1. Adding VRD-Client to account

Fields for adding a new VRD-Client to the account are shown in the Devices tab at the bottom of the work field. Enter the serial number and activation code (Pin) of VRD-Client in the appropriate fields (see Figure 4). The serial number (A) and pin (B) are given on the VRD-Client label (see Figure 5).

Then click Add device. The added VRD-Client will appear in the list of devices.

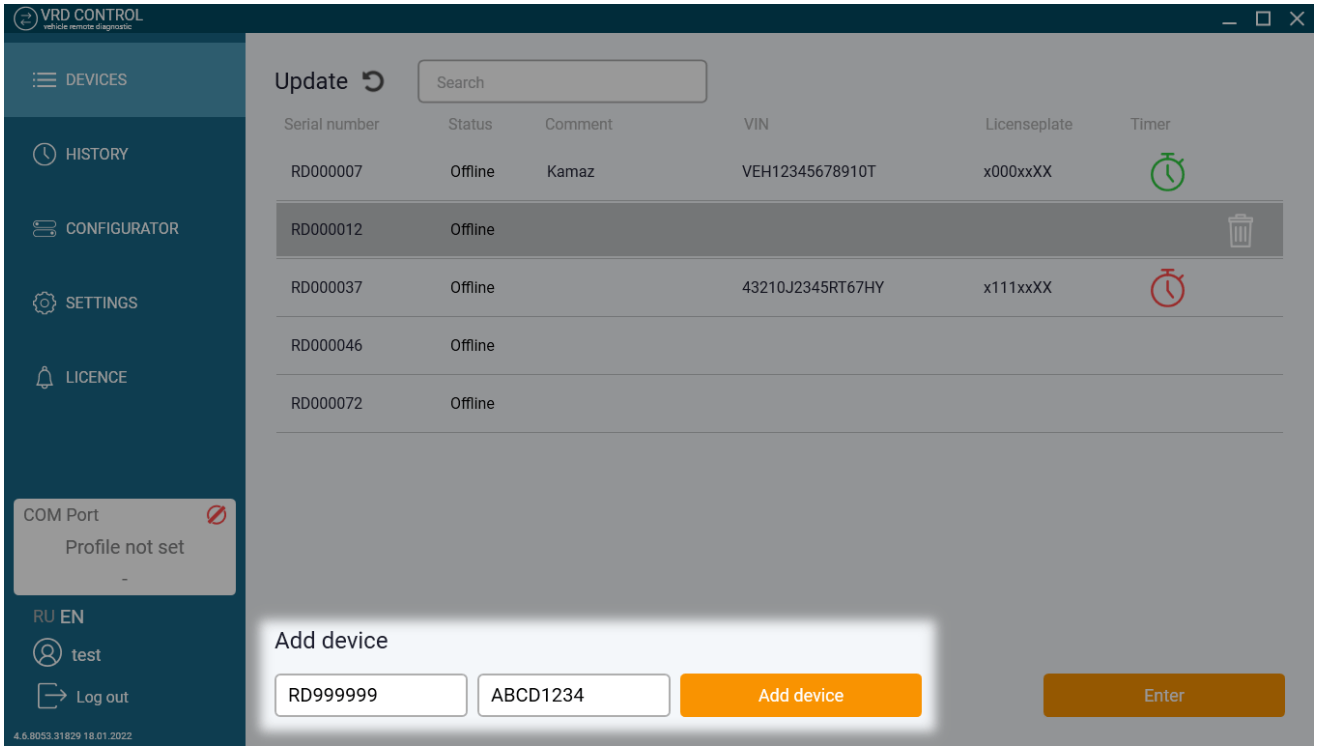

Figure 4 Adding VRD-Client

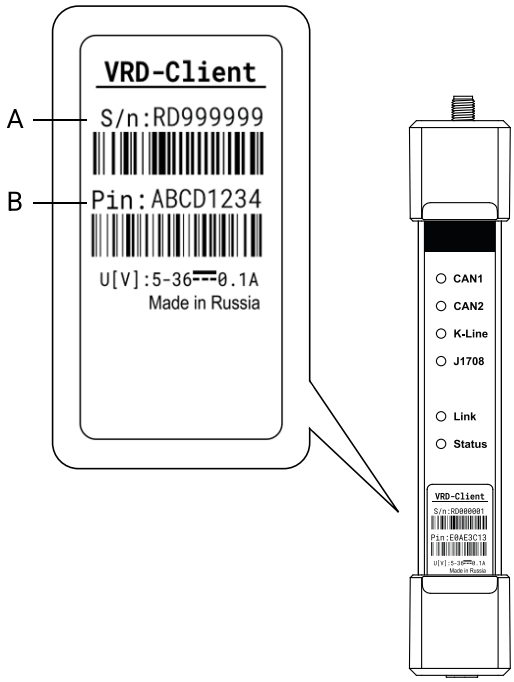

Figure 5 VRD-Client device. Serial number and pin

If data is incorrect, the following error will be displayed:
— **Device already busy!** – VRD-Client is added to another account;
— **Device not found!** – Invalid serial number of VRD-Client;
— **Invalid pin!** – Invalid pin of VRD-Client.

4.2. Deleting VRD-Client from account

To delete the VRD-Client from account, select it in the list of devices and click on the rightmost recycle bin icon (see Figure 6).

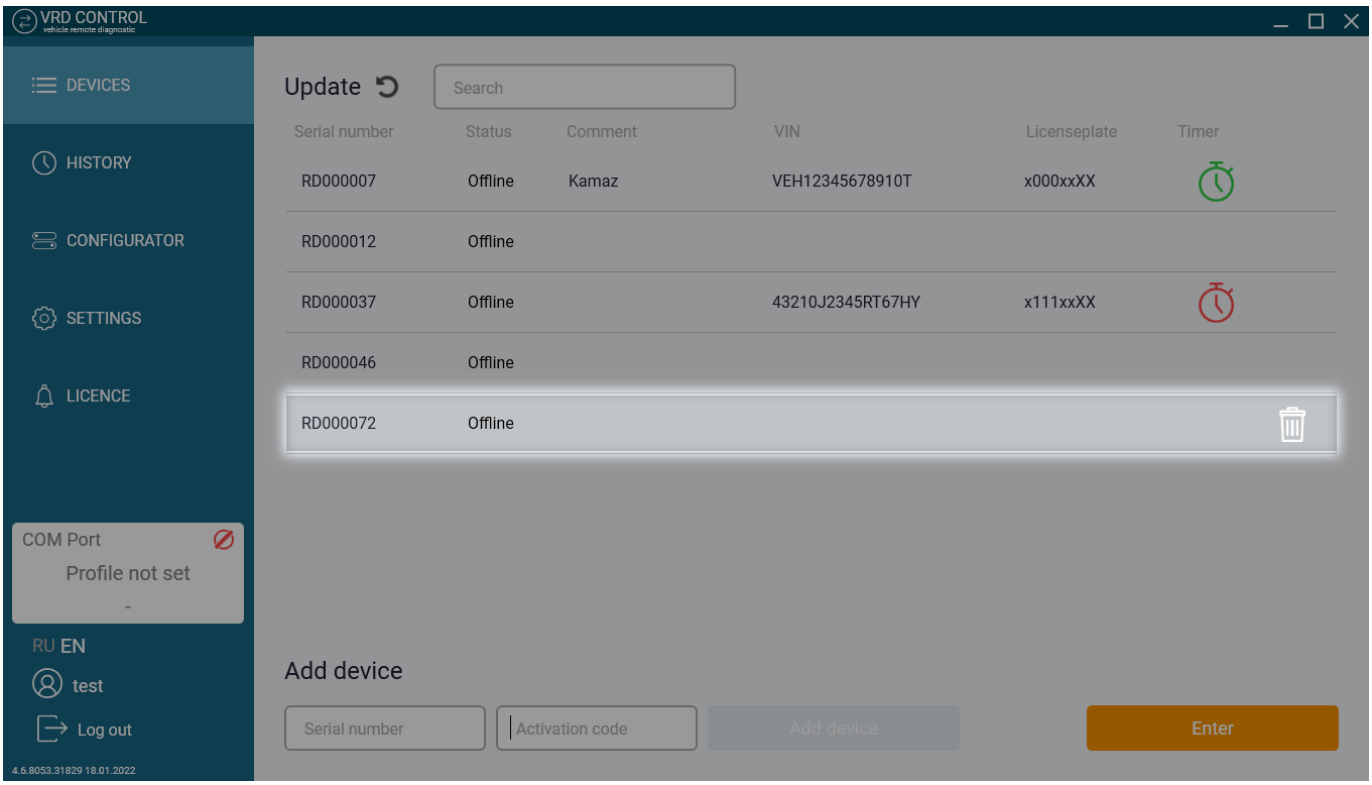

Figure 6 Deleting VRD-Client

A message confirming the deletion will be displayed. To confirm the deletion, click Delete device, to cancel, click Cancel or cross mark in the upper right corner (see Figure 7).

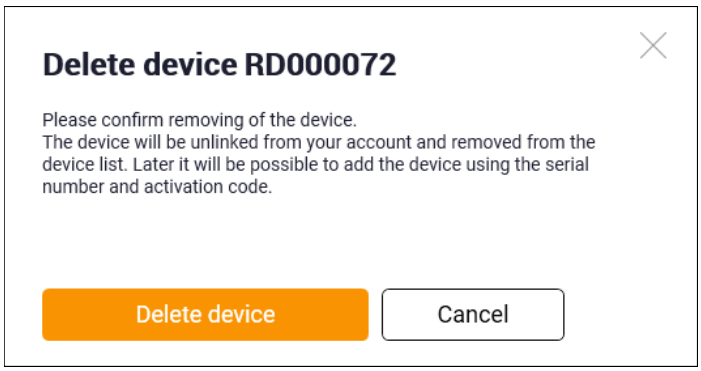

Figure 7 Confirming VRD-Client deletion

4.3. Detailed information on VRD-Client

To add and view detailed information on VRD-Client, select it in the list of devices and click Select or double-click. A flypage of the selected device will open (see Figure 8), here you can add information on the device. After entering or changing information, click Save.

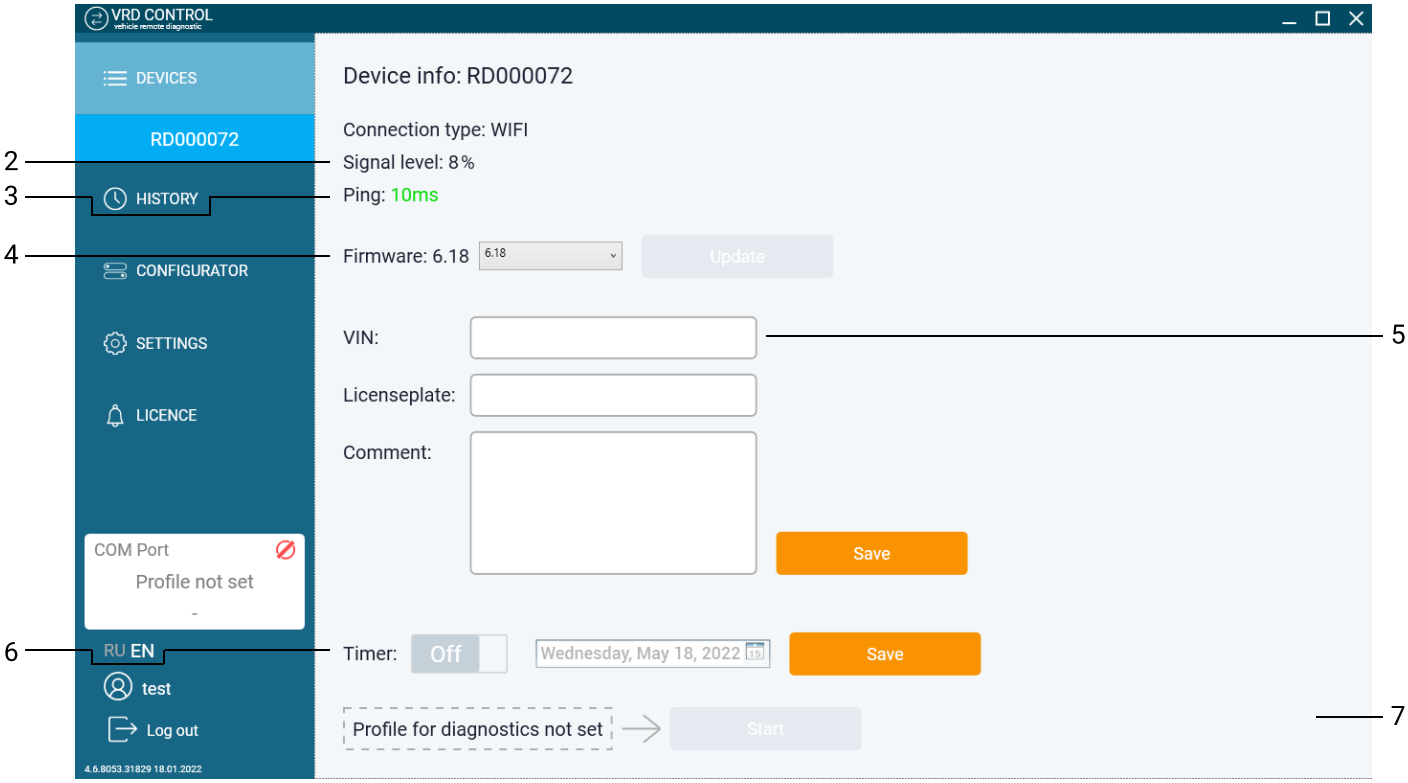

Figure 8 Device flypage

Table 2. Information on device

No	Name	Description
1	Type of connection	Type of wireless connection of VRD-Client (2G, 3G, 4G, Wi-Fi / Offline)
2	Signal level	Received signal level
3	Ping	Signal delay time from VRD-Client to server
4	Firmware version	Current firmware version
5	Information fields	Help to add additional information on device: VIN, гос. номер (number plate) and комментарий (comment)
6	Timer	Enable, disable and set the date of timer
7	Run diagnostic session	Running a diagnostic session on the selected VRD-Client

4.4. Wireless update of firmware on VRD-Client

The system provides for wireless update of VRD-Client firmware.

Warning!
For wireless firmware update, VRD-Client shall be connected to the server: the VRD Control software displays the 2G, 3G, LTE or WI-Fi connection status, and the Link indicator on the device is on and the Status indicator is blinking.

To update the VRD-Client firmware, open the flypage of the selected device. In the Firmware version column, select the desired firmware version from the drop-down list (see Figure 9). Click Update.

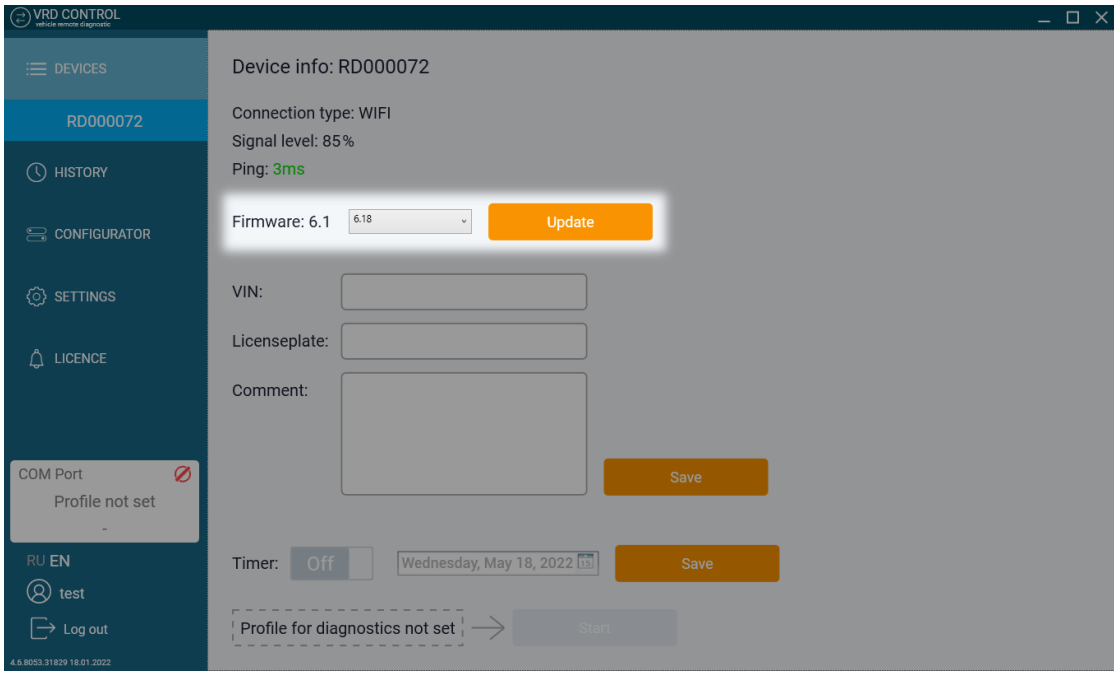

Figure 9 Firmware update

The Firmware version column will show that the VRD-Client is being updated.
During update, the device is not available for any operations. If update is successful, the firmware version number of the device will be updated. If update fails, the version number remains unchanged.

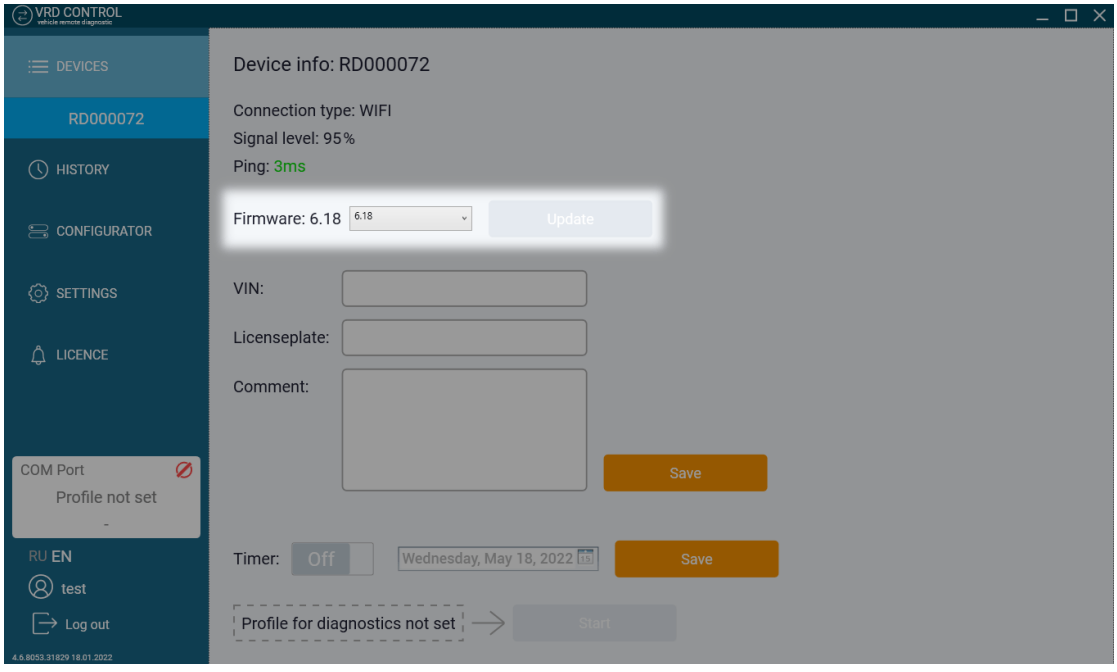

Figure 10

4.5. Timer

Set the timer to a specific date, such as scheduled diagnostic date. The system will notify the user when the specified date has occurred.

The timer is shown in the device flypage, at the bottom of the window (see Figure 10). To set the timer, set the option button to the On position and select the reminder date in the calendar. Click Save.

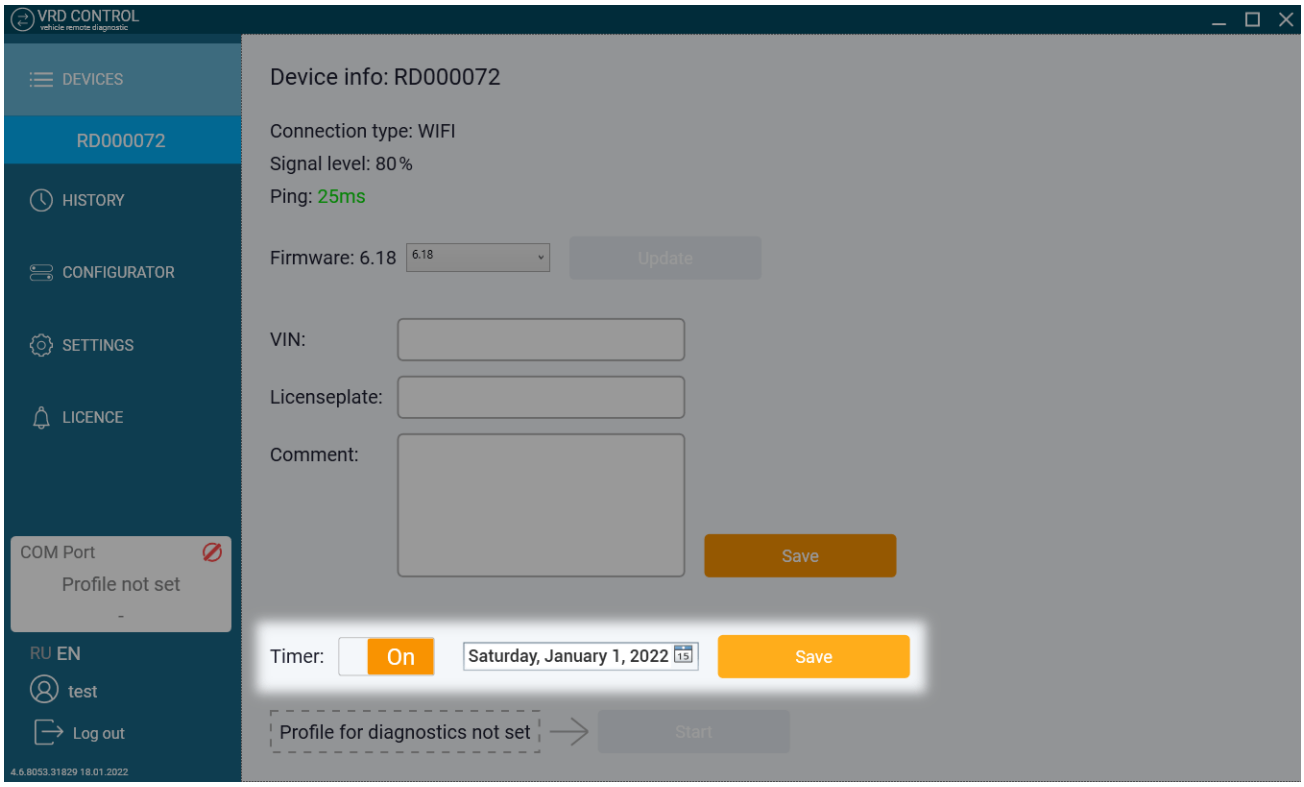

Figure 11 Timer

For devices with a set timer, the On option button lights up in the device flypage, and the following icon is displayed in the list of devices:

(green) — reminder date has not occurred yet;

(red) — reminder date has occurred.

For devices without a set timer, the Off option button is dimmed out in the device flypage, and no icon is displayed in the list of devices.

To delete the timer, set the timer option button to the Off position. The option switch in the timer column goes out. Click Save.

5. History

The tab History displays a list of all diagnostic sessions performed. The following information is displayed in the list:
— VRD-Client serial number
— Diagnostic profile
— Starting date and time of diagnostic session

To control the list of diagnostic sessions, set a filter by diagnostic session date or enter the serial number of the VRD-Client in the Search field.

Filter by diagnostic session date:
Specify the period of interest in the calendar and click Apply.

Filter by VRD-Client serial number:
Enter the serial number (in part or in whole) in the Search field. The list of devices will be updated automatically (see Figure 11).

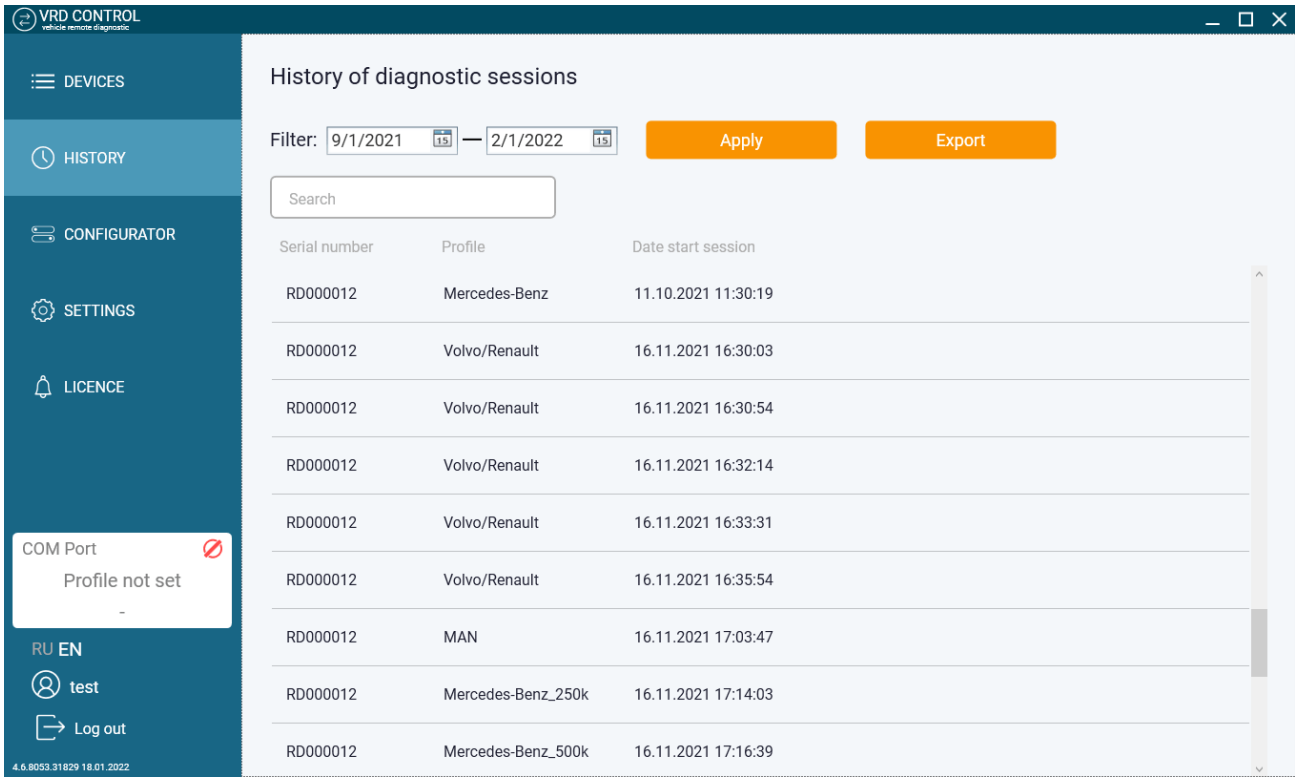

Figure 12 History of diagnostic sessions

6. Configurator

In the Configurator tab, VRD-Client is connected to PC to set up a wireless connection to the server and update the firmware. VRD-Server is connected for firmware update only.

Warning!
The firmware update is available to logged in users only.

6.1. Connecting VRD Client to VRD Control software

To connect VRD-Client to VRD Control software, proceed as follows:
1. Insert a SIM card into VRD-Client;
2. Connect VRD-Client to the computer via USB cable;
3. Open the Configurator tab in VRD Control software;
4. Select the COM Port to which the device is connected:

For automatic connection, check the Auto (see Figure 12). Wait until the device is connected.

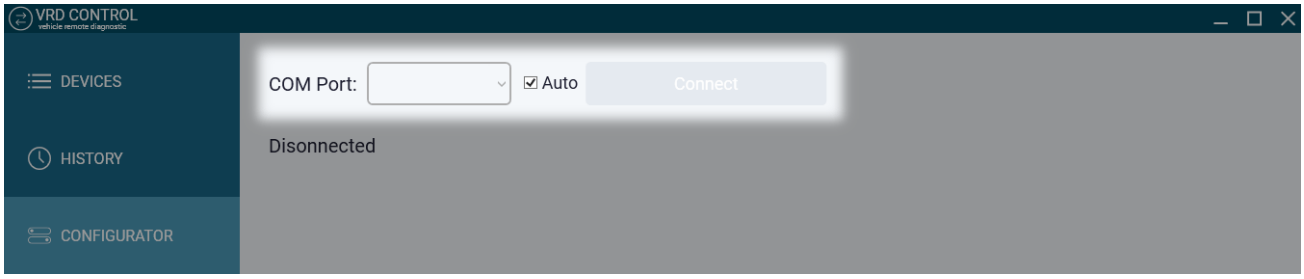

Figure 13 Automatic connection of VRD-Client to configurator

For manual connection, select the COM port from the drop-down list that corresponds to the connected device (see Figure 13). Click Connect.

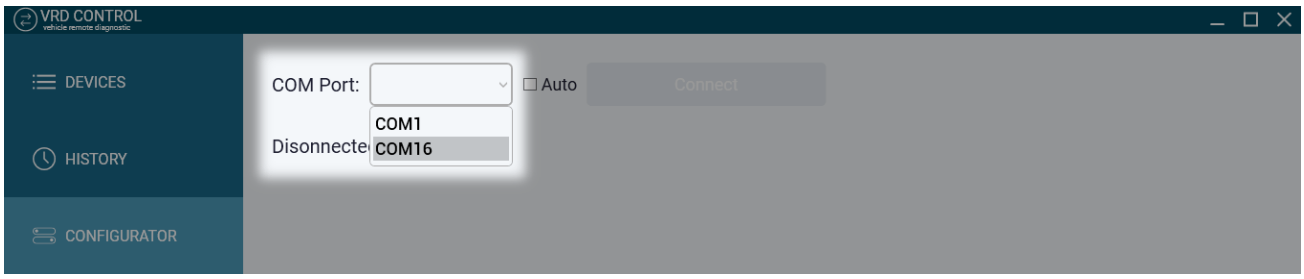

Figure 14 Manual connection of VRD-Client to configurator

When VRD-Client is connected successfully, the configurator will display its serial number, firmware version and communication setup fields (see Figure 14).

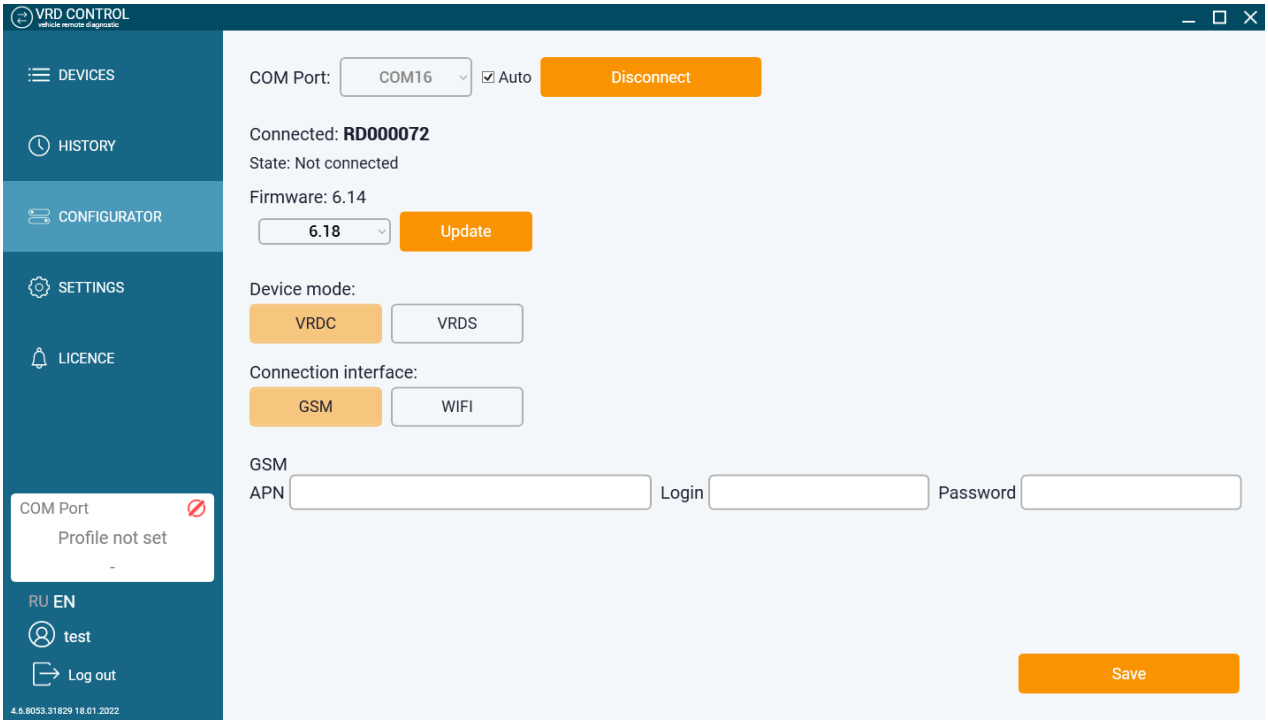

Figure 15 Software interface with VRD-Client connected

6.2. Disconnecting VRD Client from VRD Control software

To disconnect VRD-Client from VRD Control software, proceed as follows:
1. Open the Configurator tab in VRD Control software;
2. Select the COM Port of the device to be disconnected;
3. Click the Disconnect button in the COM Port selection field (see Figure 15).

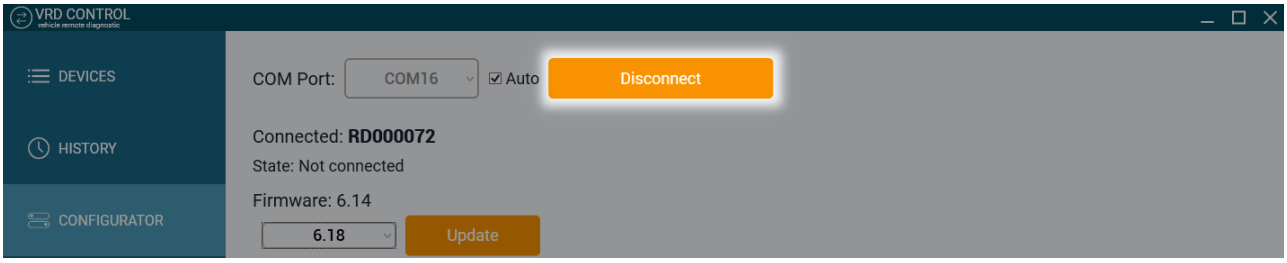

Figure 15 Disconnecting VRD-Client from configurator

6.3. Firmware update

To update the VRD-Client and VRD-Server firmware, select the desired version from the drop-down list and click Update (see Figure 16).

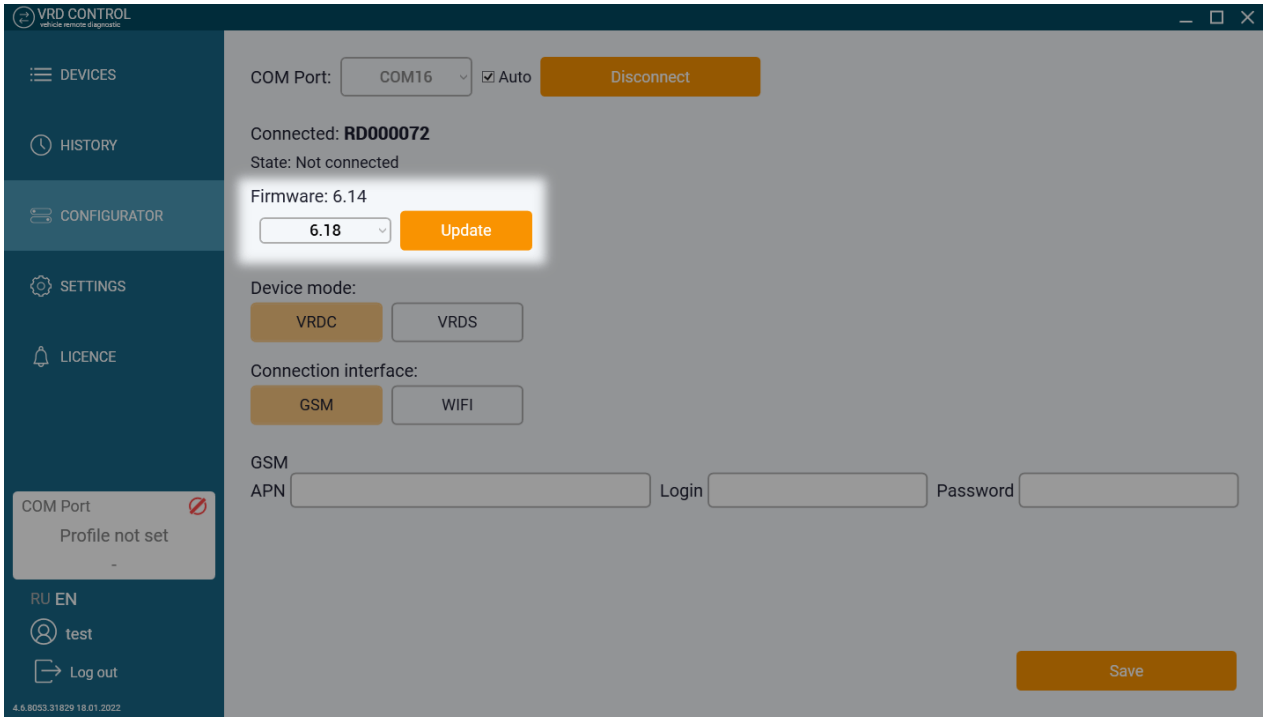

Figure 16.1 VRD-Client firmware update

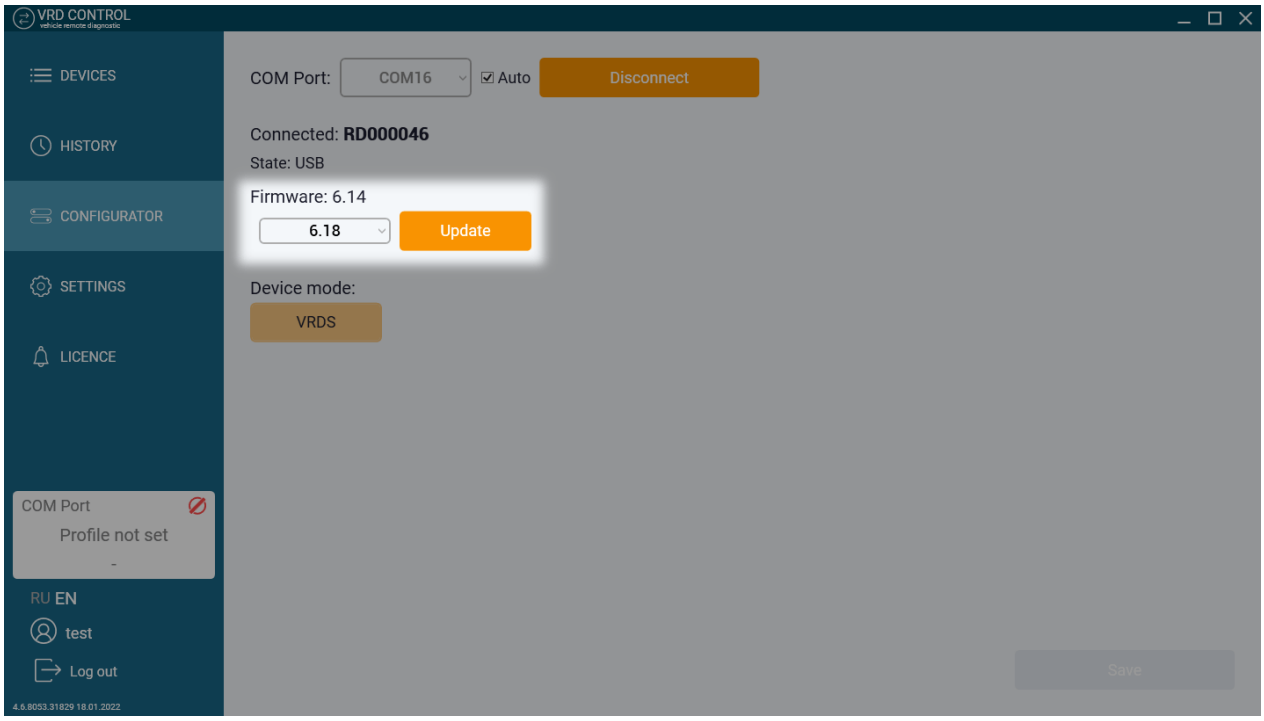

Figure 16.2 VRD-Server firmware update

During update, VRD-Client and VRD-Server are not available for any operations. After update, the device will be disconnected from the configurator and reboot.

6.4. Configuration of VRD-Client communication interface

VRD-Client supports two communication interfaces - GSM and Wi-Fi. For configuration via GSM communication interface, see para 6.4.1, for configuration via Wi-Fi communication interface, see para 6.4.2.

The VRD-Client is connected remotely via a pre-configured communication link. If both communication links are configured, the device will be connected to the last configured link.

6.4.1. Setting GSM as communication interface

To set GSM as the communication interface, proceed as follows:
1. Insert a SIM card into VRD-Client
2. Connect VRD-Client to the computer via USB cable
3. Open the Configurator tab in VRD Control software
4. Connect VRD-Client to software (see para 6.1)
5. Click the GSM button
6. Specify settings of APN access point of SIM card inserted in the device (see Figure 17). Fill in the following fields:
– APN: specify APN access point name
– Login: specify APN access point login
– Password: specify APN access point password

Warning!
The firmware update is available to logged in users only.

7. Click Save.

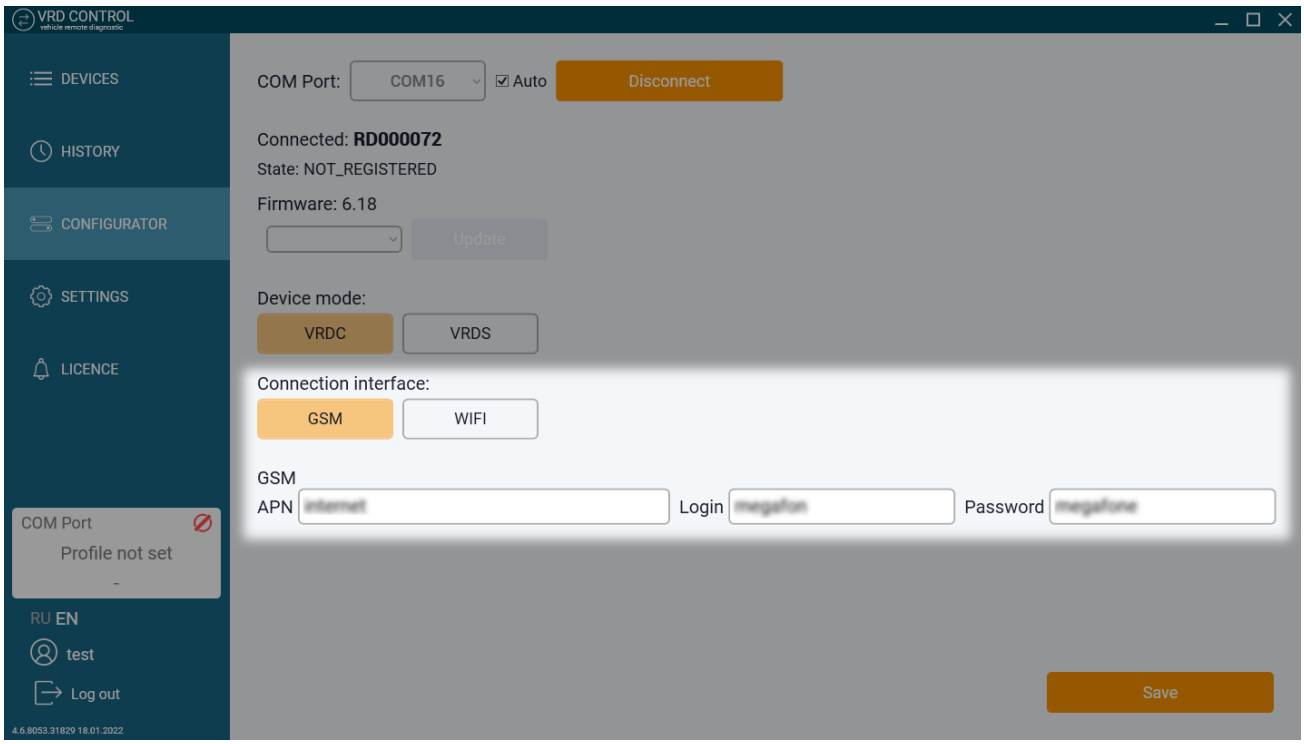

Figure 17 GSM communication interface

8. Wait until the device is connected.
When VRD-Client is successfully connected to the server, the connection data will appear in the Status line: type of connection / signal level / successful connection message

(2G, 3G, LTE) / 100% / Connected to Server

If no connection is established, the **Not connected** message will appear in the Status line.

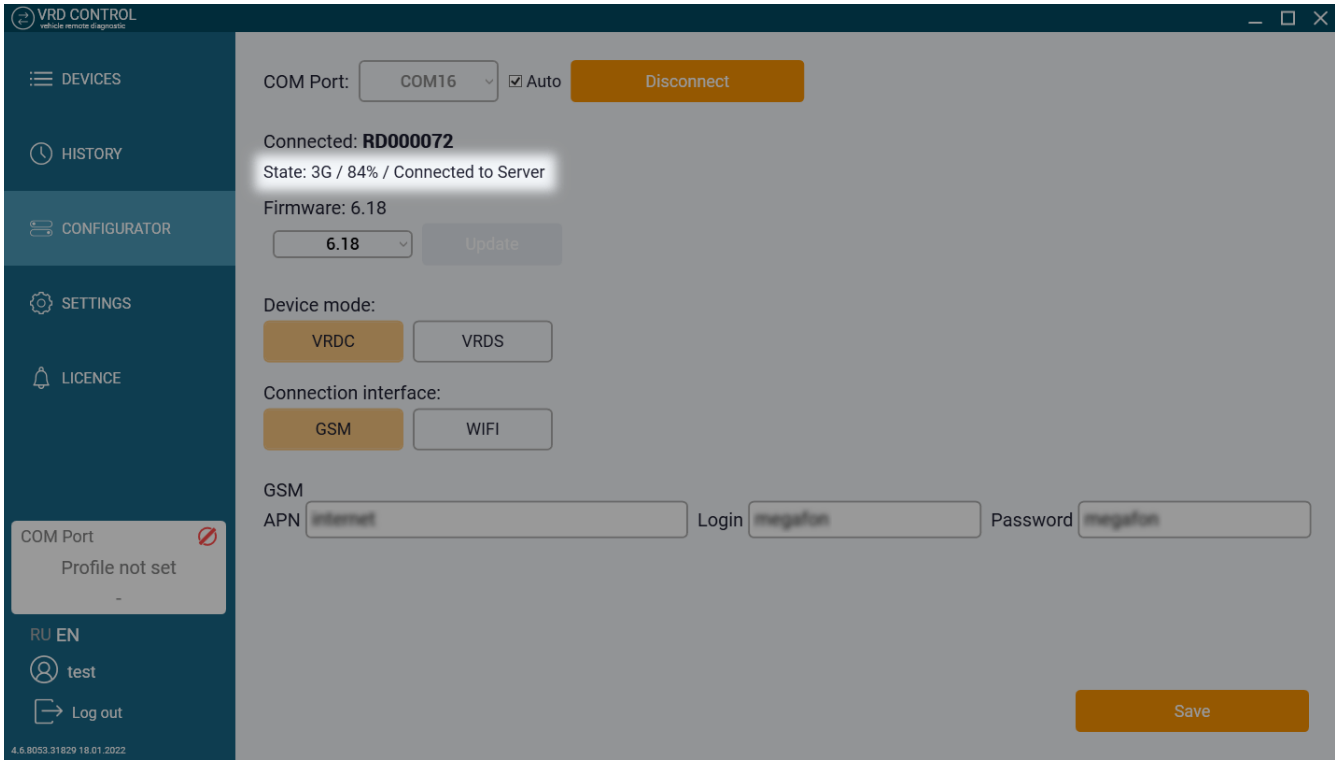

Figure 18

6.4.2. Setting Wi-Fi as communication interface

To set Wi-Fi as the communication interface, proceed as follows:
1. Connect VRD-Client to the computer via USB cable.
2. Open the Configurator tab in VRD Control software.
3. Connect VRD-Client to software (see para 6.1).
4. Click the Wi-Fi button.
5. Specify settings of the Wi-Fi access point to which the device shall be connected (see Figure 18). Fill in the following fields:
— **SSID**: specify Wi-Fi access point name;
— **Password**: specify Wi-Fi access point password
6. Click Save.

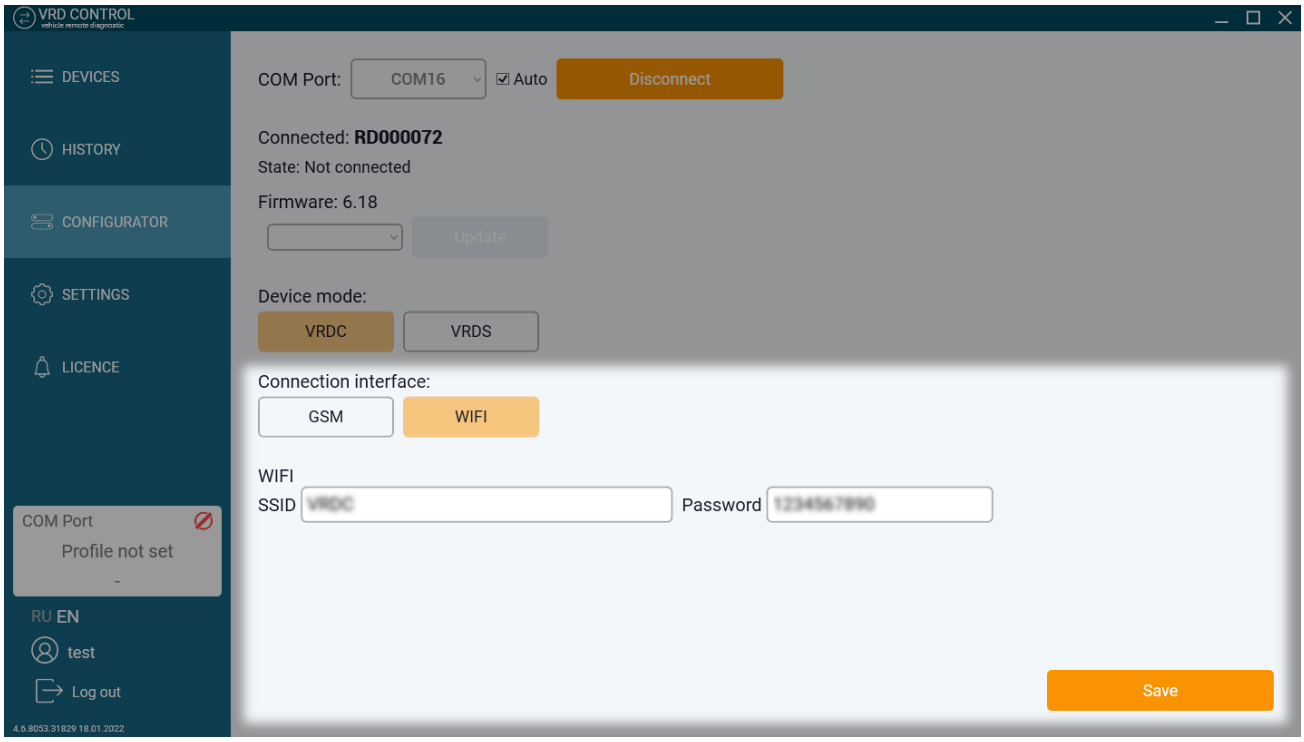

Figure 19 Wi-Fi communication interface

7. Wait until the device is connected.

When VRD-Client is successfully connected to the server, the connection data will appear in the Status line: type of connection / signal level / successful connection message

WIFI / 100% / Connected to Server

If no connection is established, the Not connected message will appear in the Status line.

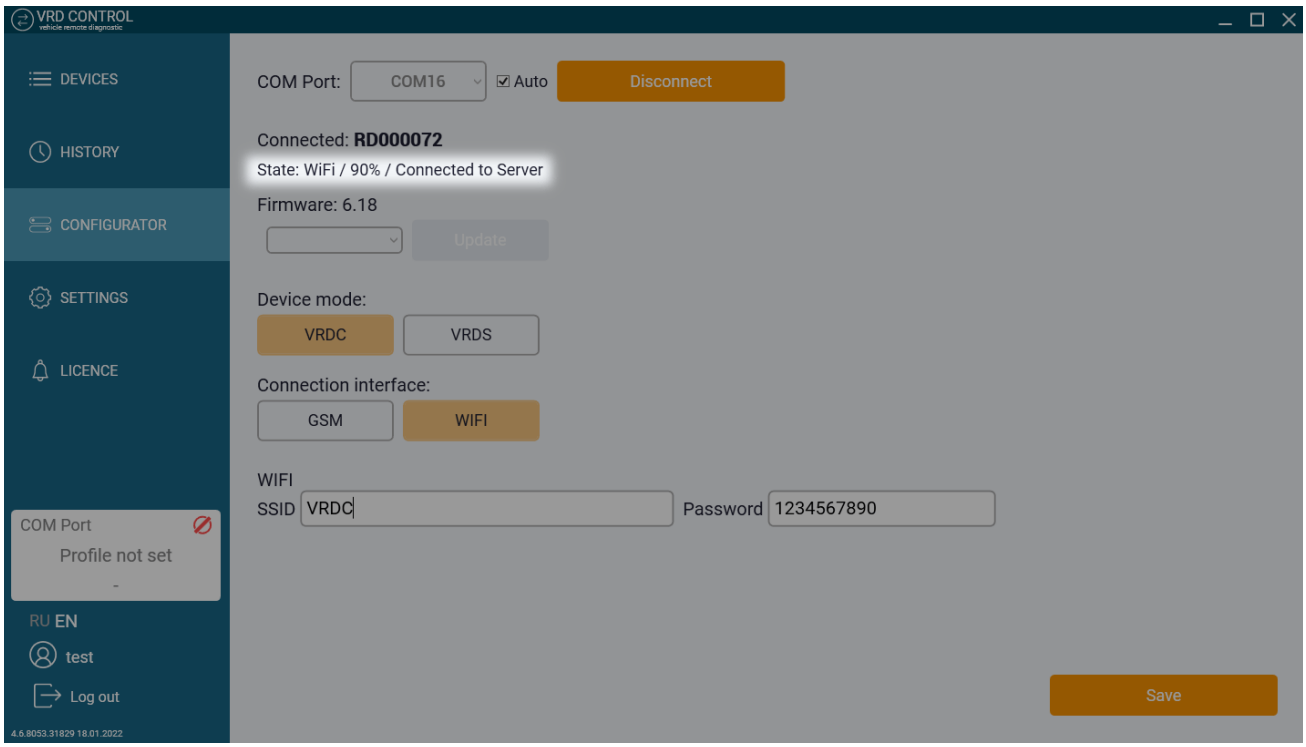

Figure 20

7. Settings

The Settings tab is used for setting the diagnostic profile and selecting the diagnostic server.

7.1 Connecting VRD-Server to VRD Control software

To connect VRD-Server to VRD Control software, proceed as follows:
1. Connect VRD-Server to the computer via USB cable
2. Open the Settings tab in VRD Control software
3. Select the COM Port to which the VRD-Server is connected from the drop-down list (see Figure 19)

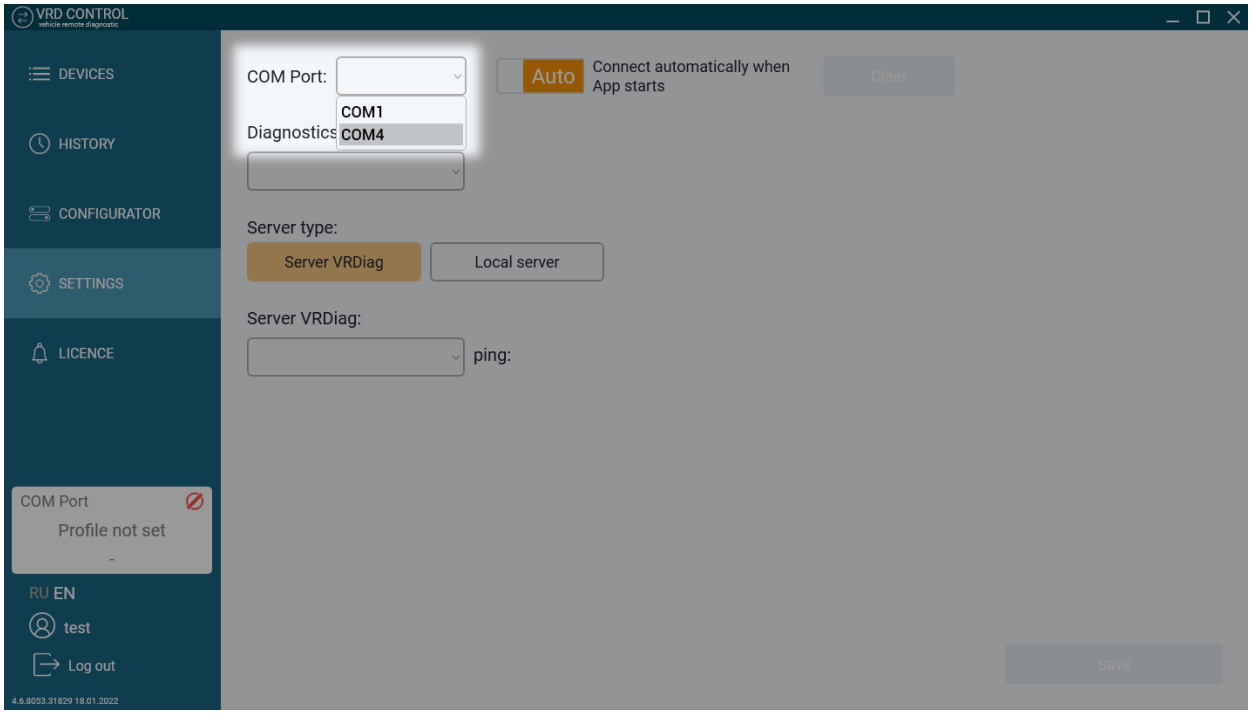

Figure 21 Connecting VRD-Server to VRD Control software

How to find the COM Port to which the device is connected:
1. Open Device Manager on PC
2. Go to the Ports (COM & LPT) tab
3. Find the desired device in the list of devices. The COM port number is shown in parentheses, next to the device name (see Figure 20)

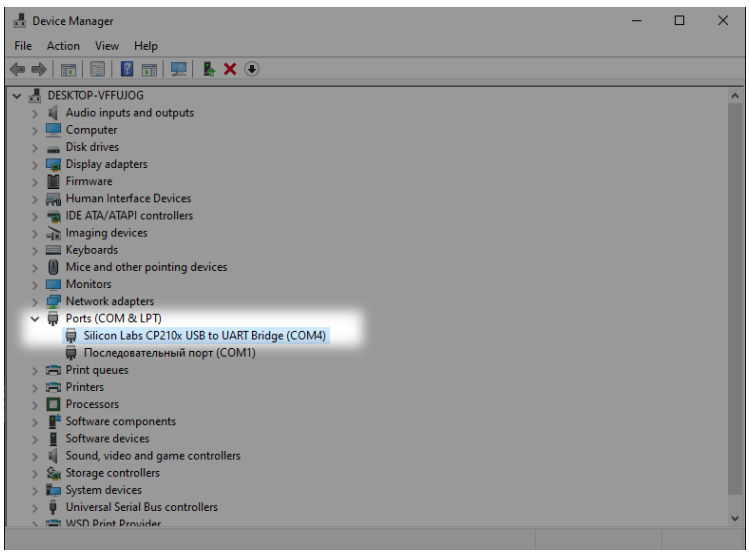

Figure 22 Device Manager

Set the switch for automatic connection to the selected VRD-Server to the following position:
On – when the software boots up for the next time, the system will automatically connect to the selected VRD-Server.
Off – when the software boots up for the next time, the system will reset the selected COM port.

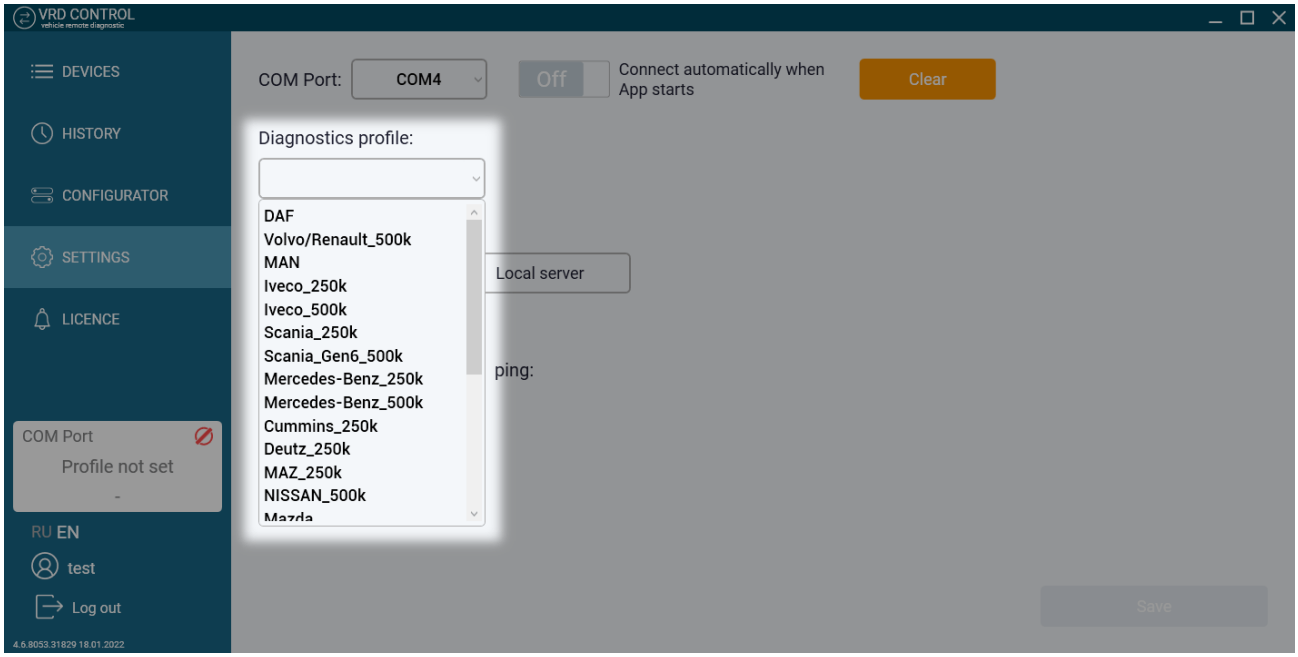

Figure 23

7.2. Diagnostic profile

Select diagnostic profile from the drop-down list (see Figure 23). The diagnostic profile shall correspond to brand of the diagnosed vehicles: OBD-II connector pin configuration depends on the selected profile.

Important!
Do not diagnose a vehicle using a diagnostic profile for a different vehicle.

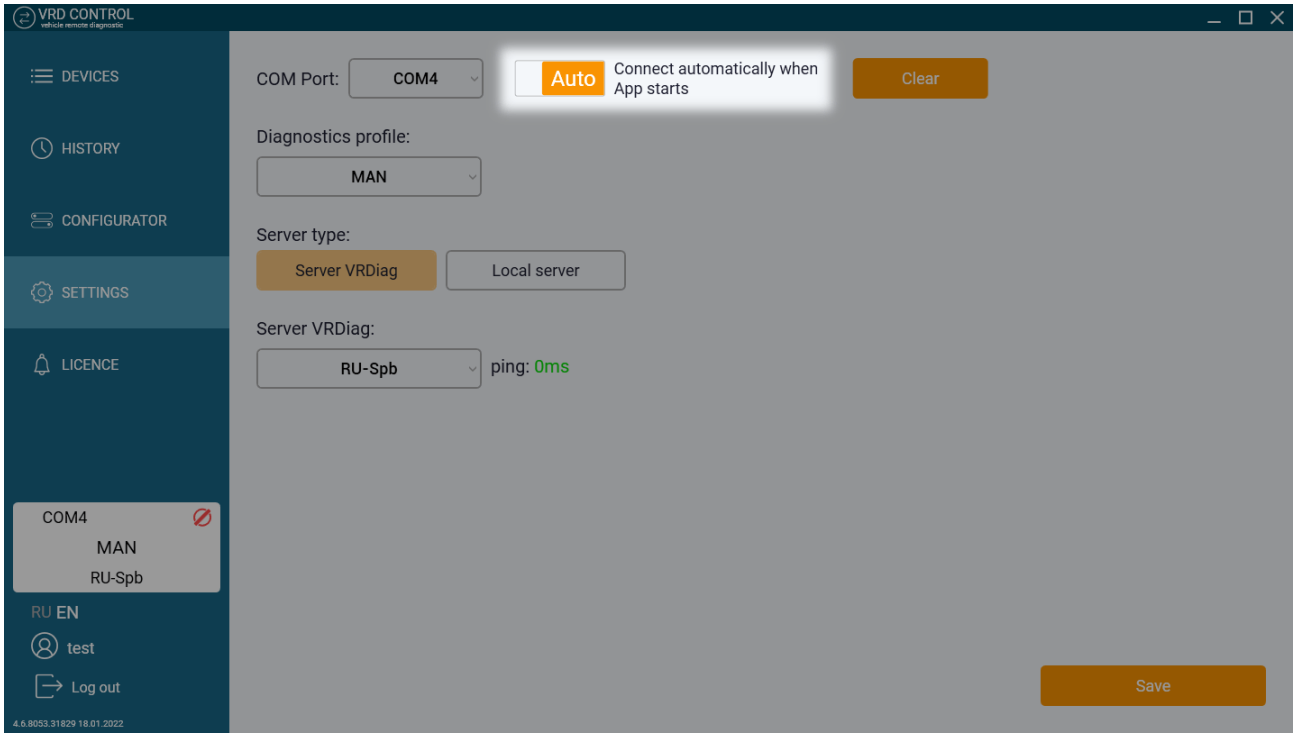

Figure 24 Selecting diagnostic profile

Table 3. Description of diagnostic profile

No	Name	Description	Cable
1	DAF	DAF trucks above XF105 and Paccar units	OBD-II
2	Volvo/Renault_500k	Volvo/Renault trucks and units	OBD-II
3	MAN	MAN Trucks and aggregates	OBD-II
4	Iveco_250k	IVECO trucks and aggregates	OBD-II
5	Iveco_500k	Daily until 2020, and Iveco light commercial vehicle units	OBD-II
6	Scania_250k	2004-2016 editions	OBD-II
7	Scania_Gen6_500k	Next Generation, 6th Generation	OBD-II
8	Mercedes-Benz_250k	Mercedes trucks and units compatible with can1-250k	OBD-II
9	Mercedes-Benz_500k	Mercedes trucks and cars and units compatible with can1-500k	OBD-II
10	Cummins_250k	Cummins units compatible with can1-250k, can2-250k	OBD-II, Deutsh-9p adapter
11	Deutz_250k	Deutz units compatible with can1-250k, can2-250k	14pin adapter
12	MAZ_250k		OBD-II
13	NISSAN_500k	NISSAN passenger cars	OBD-II
14	Mazda	MAZDA passenger cars	OBD-II
15	VAG_500k	VAG passenger cars	OBD-II
16	KAMAZ	KAMAZ 5490 series trucks	OBD-II
17	KAMAZ-K5	New KAMAZ models in the K5 range	OBD-II
18	WABCO-5V	Brake system, can1-250k, can2-250k	Adapter
19	WABCO-24V	Brake system, CAN1-125k	Adapter
20	STILL_50k	STILL forklifts	4p adapter
21	JungHeinrich	JungHeinrich forklift trucks	DB-9 adapter
22	JohnDeere-CAN1-CAN2	JohnDeere special equipment (transport + auxiliary equipment)	Deutsh-9p adapter
23	JohnDeere-CAN2-CAN3	JohnDeere special equipment (transport + power transmission)	Deutsh-9p adapter

Table 3. Description of diagnostic profile (Continued)

No	Name	Description	Cable
24	Volvo_250k	Volvo special equipment	Deutsh-9p adapter

7.3. Selecting data transfer server

Diagnostic data is transferred between VRD-Server and VRD-Client via server. A local server or one of Remote Diag servers may be used as a server.

Local server
One of Remote Diag servers acts as a server: during diagnostic session, VRD-Server is connected to VRD-Client via the selected Remote Diag server. Remote Diag servers are located worldwide to minimize data transmission delays.

Important!
A static IP address shall be available to use a local server.

Remote Diag servers
One of Remote Diag servers acts as a server: during diagnostic session, VRD-Server is connected to VRD-Client via the selected Remote Diag server. Remote Diag servers are located worldwide to minimize data transmission delays.

7.3.1. Setting up a local server

To set up a local server, proceed as follows:
1. Connect VRD-Server to the computer via USB cable.
2. Open the Settings tab in VRD Control software.
3. Select the COM Port to which the VRD-Server is connected from the drop-down list (see para 7.1).
4. Select the diagnostic profile which corresponds to the diagnosed vehicle (see para 7.2).
5. Select Local server.
6. Fill in all local server settings fields (see Figure 22).

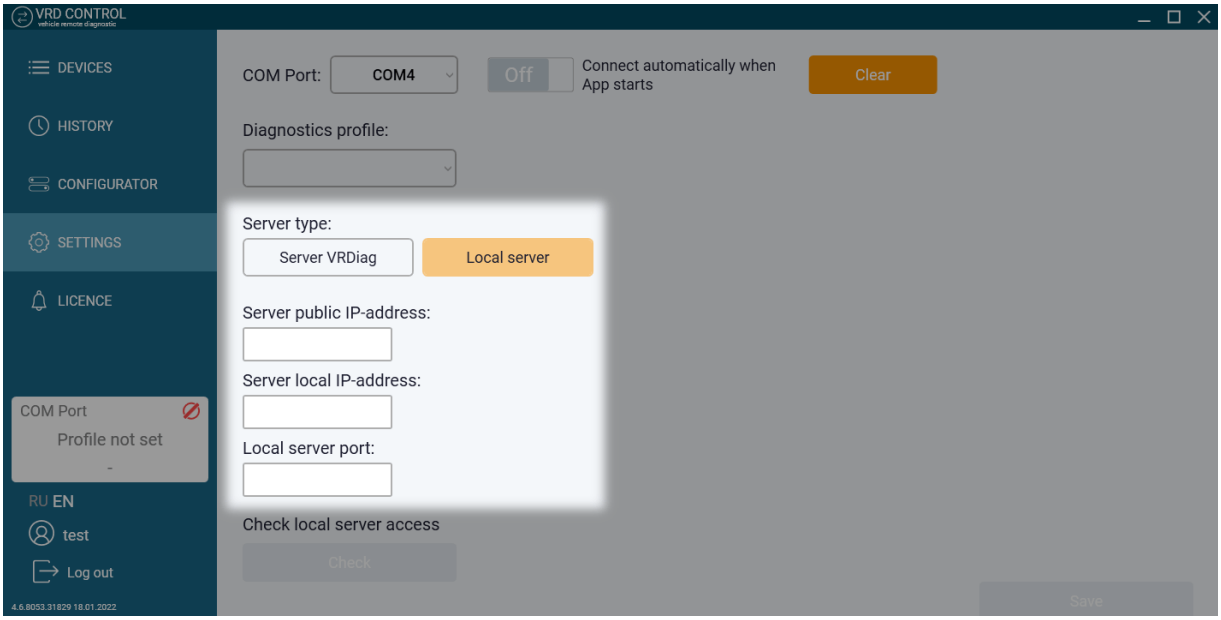

Figure 25 Setting up a local server

Server public IP address: specify public static IP address of the server.
Server local IP address: specify local IP address of the computer used for server running. If your computer is behind a router (behind NAT), enter the computer private IP address. It is shown in the NIC properties.
Local server port: select any available port. If your computer is behind a router, do not forget to forward the specified port through this router. Also configure forwarding of this port through Firewall windows.

7. Click Check to check if the local server is available.
If the local server is available for connection, a check mark will appear next to the Check button (see Figure 23).

Important!
If the computer is directly connected to external network and has a static IP address, enter it in both fields: as a public IP and as a local IP.

If the local server is unavailable for connection, the error message will appear next to the Check button (see Figure 24).

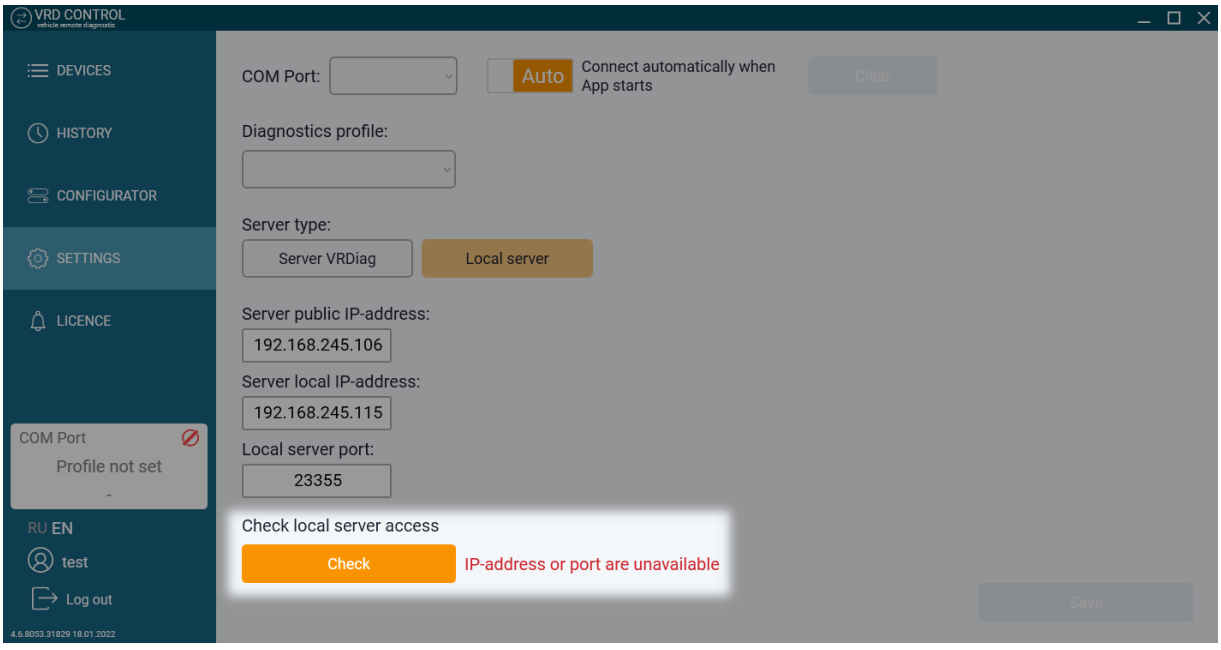

Figure 26.1 Local server available for connection

Figure 26.2 Local server unavailable for connection

8. Click Save.

Warning!
Settings are saved in the root folder of the software. At the next log in to the same computer, the saved settings will apply automatically.

The information bar will show the COM port to which the VRD-Server is connected, its individual number, connection status, diagnostic profile, and data transfer server settings (see Figure 27).

Figure 27 Diagnostic session settings information bar

7.3.2. Selecting Remote Diag serve

To select the Remote Diag server, proceed as follows:
1. Connect VRD-Server to the computer via USB cable
2. Open the Settings tab in VRD Control software
3. Select the COM Port to which the VRD-Server is connected from the drop-down list (see para 7.1)
4. Select the diagnostic profile which corresponds to the diagnosed vehicle (see para 7.2)
5. Click VRDiag Server
6. Select a server with minimum delays from the drop-down list, the delay (ping) is shown to the right of the server name (see Figure 28)

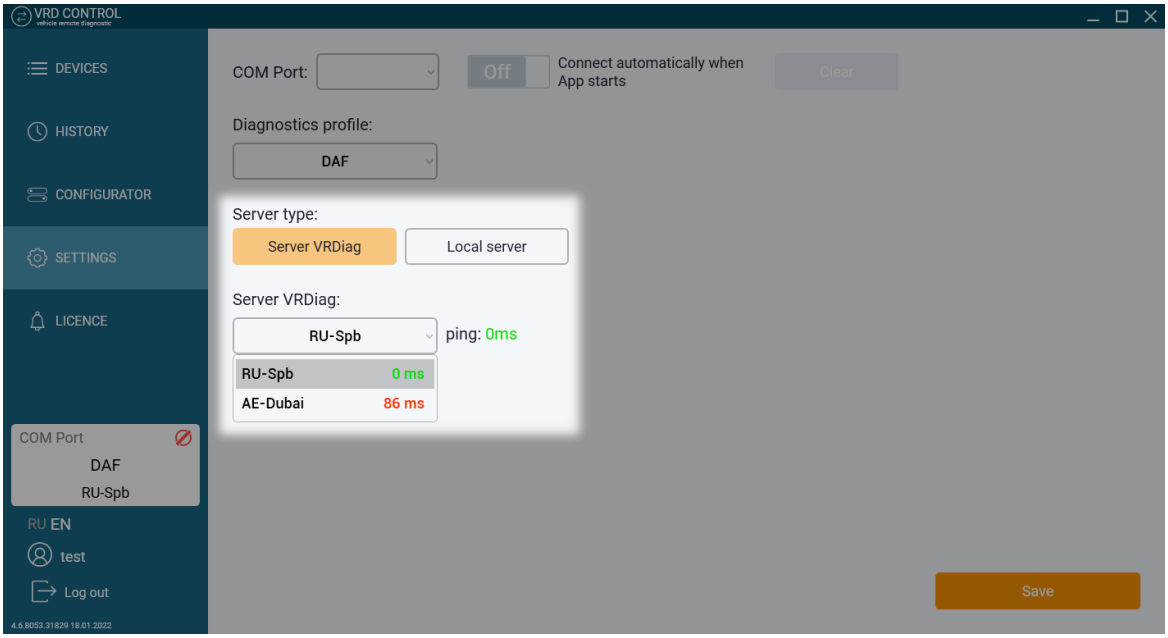

Figure 28 Selecting Remote Diag server

7. Click Save.

The information bar will show the COM port to which the VRD-Server is connected, its individual number, connection status, diagnostic profile, and data transfer server settings (see Figure 28).

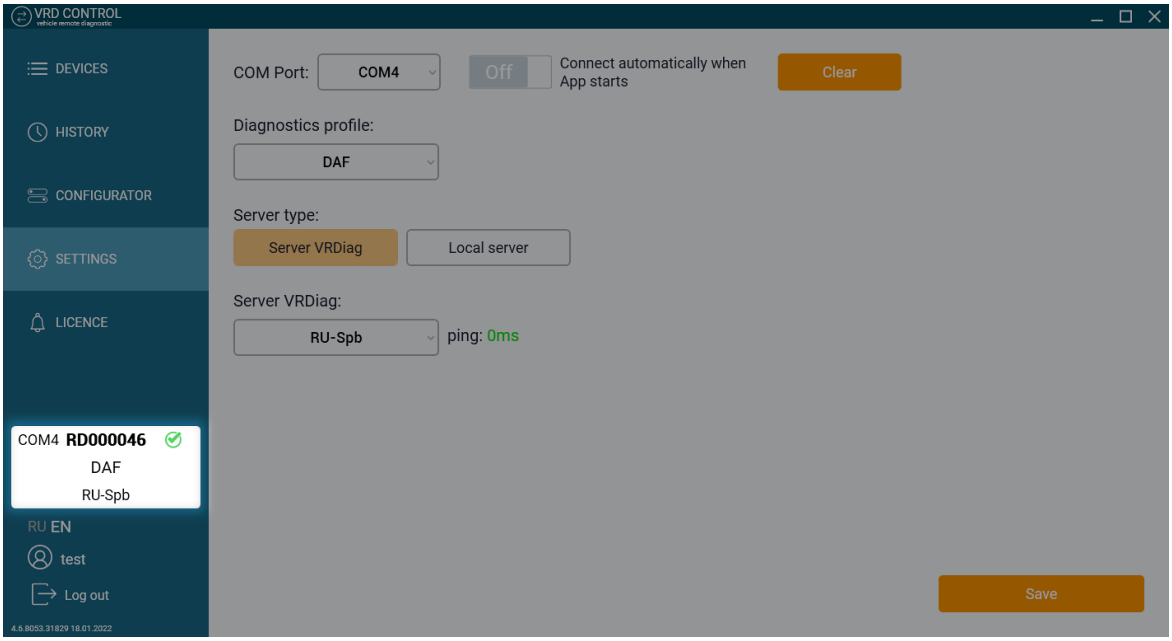

Figure 29 Diagnostic session settings information bar

8. License

The License tab shows validity of license for using the VRD CONTROL software.

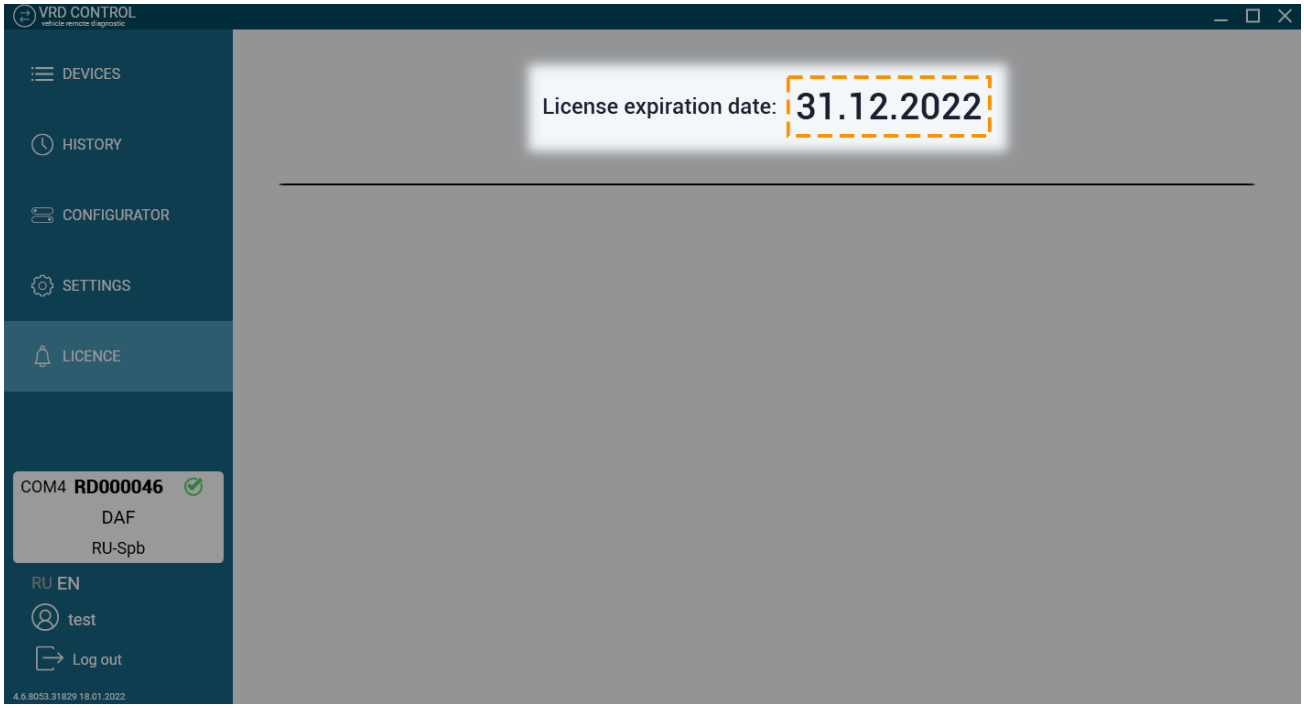

Figure 30

9. Run diagnostic session

To run a diagnostic session, proceed as follows:
1. Connect VRD-Client to the diagnosed vehicle.
2. Connect VRD-Server to PC and VCI diagnostic tool.
3. Open the Devices tab in VRD Control software.
4. Select VRD-Client in the list of devices to be used for diagnostics.
5. Click Select.

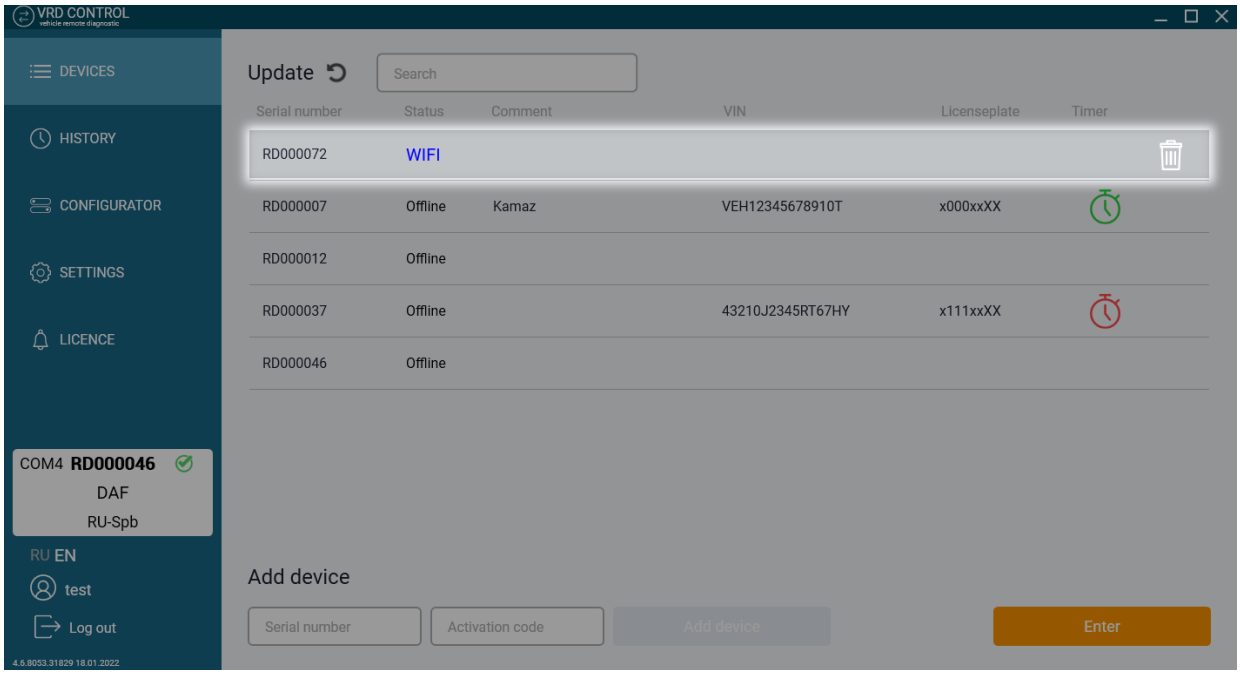

Figure 31.1 Diagnostic session interface

6. Make sure that the selected diagnostic profile corresponds to make of vehicle to which VRD-Client is connected.
7. Click Run.

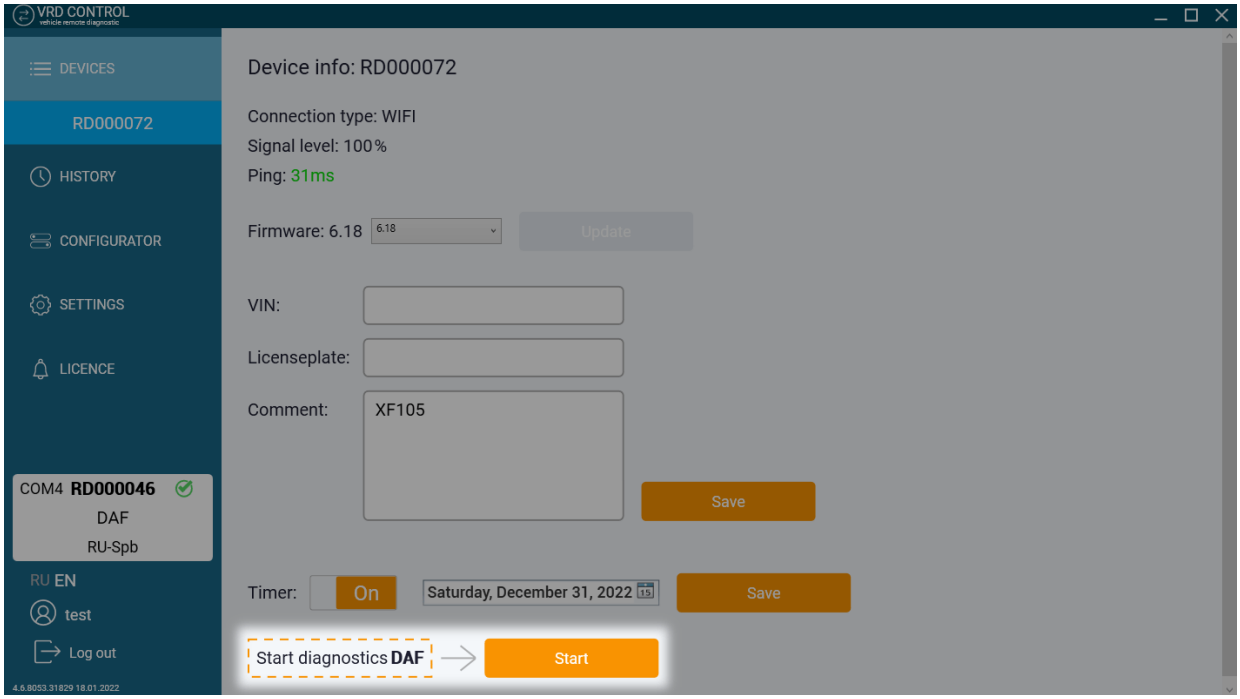

Figure 31.2 Diagnostic session interface

During diagnostic session, the connection status pop-up window is displayed on screen (see Figure 28.3).

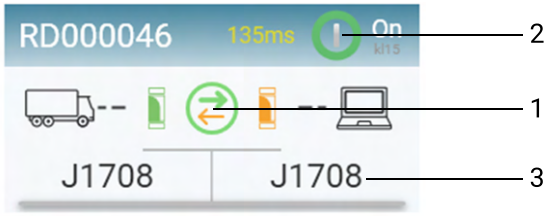

Figure 31.3 Diagnostic session interface

Table 4. Diagnostic session interface elements

No	Icon	Description
1		VRD-Client connects to data transfer server
		VRD-Client is connected to data transfer server
2	On	Vehicle ignition ON
	Off	Vehicle ignition OFF
3	J1708 J1708	Diagnostic data transmission indication (CAN1/CAN2/J1708, K-Line)

If diagnostic error occurs, the system may display the following errors:
— **VRD Server device on COM_ error!** – Lost connection with VRD-Client;
— **Remote device connection timeout** – Lost connection with VRD-Server.

If an error occurs, the connection status pop-up window will close and the diagnostic session will be stopped.