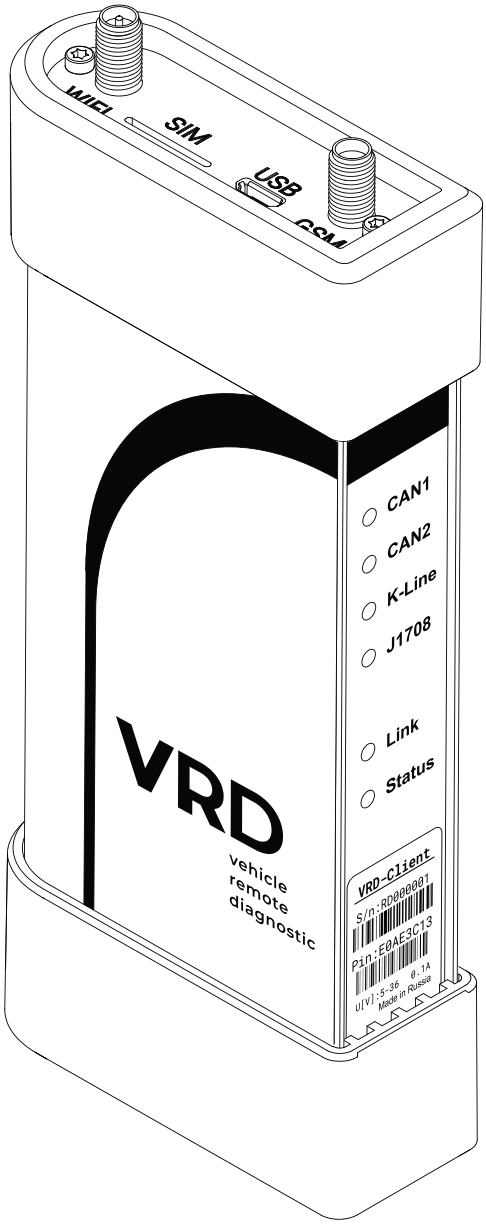
VRD-Client Device

Vehicle remote diagnostics



User Guide

vrdiag
vehicle
remote
diagnostics

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About this document

This document contains information on using the VRD-Client mobile device which makes part of VRD system.

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.

VRD-Client supports data reading and transmission via main OBD interfaces:
— Two CAN-buses that support CAN 2.0B (125, 250, 500, 1000 Kb/S);
— Eight K-lines (ISO 14230, ISO 9141);
— J1708 interface;
— Transmits vehicle ignition status (if such a functionality is supported by the vehicle).

VRD-Client supports wireless communication links:
— LTE/UMTS/HSPA+/EDGE/GPRS
— Wi-FI 2.4Ghz, 802.11b/g/n

VRD-Client is powered from the OBD-II connector. Input voltage range: 12 to 36 V, power consumption abt. 0.1 A.

Warning!
The manufacturer reserves the right to make changes to design and software of the device that do not impair operating parameters without prior notice.

1.1. 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.

1.2. Storage and operating conditions

Store and use the device in a dry and clean area. Avoid water, fuel, grease, etc. on VRD-Client. Where external surfaces of the device are to be cleaned, use a clean cloth moistened with non-aggressive detergent solution.

Do not:
— Disassemble, cut, destroy, bend, pierce or otherwise damage the device and its components;
— Use the defective device or defective components;
— Use the device for purpose other than intended.

2. Equipment kit

VRD-Client equipment kit:

1. 

2. 

3. 

4. 

Figure 1 VRD-Client equipment kit

1 — VRD-Client;
2 — VRDC-OBDII cable;
3 — Wi-Fi antenna;
4 — GSM antenna.

3. Configuration

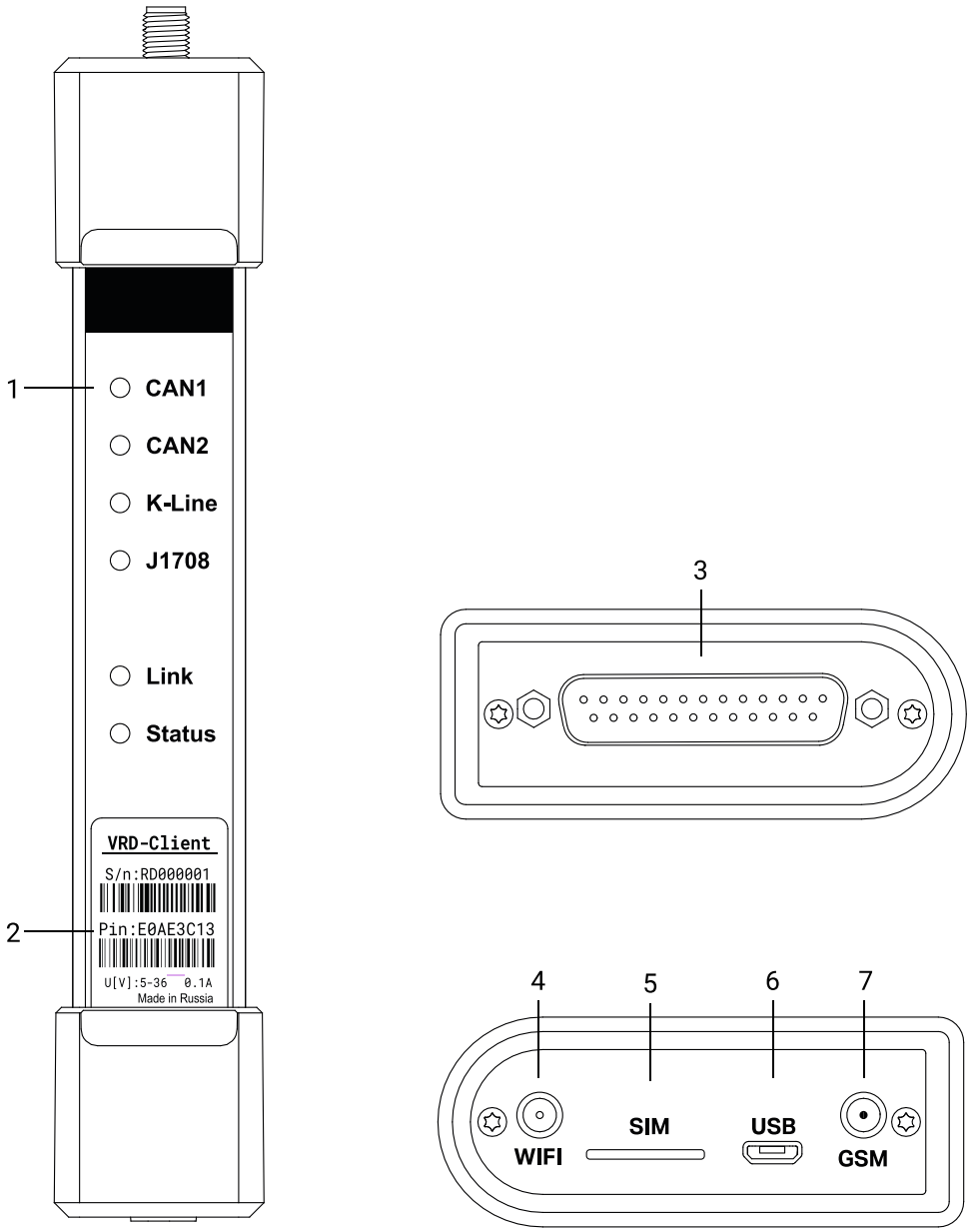
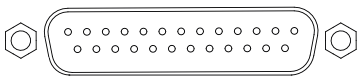


Figure 2 VRD Client

1 — VRD-Client indicators;
2 — Label with device serial number and pin;
3 — DB-25 connector;
4 — SMA connector;
5 — SIM card slot;
6 — Micro USB connector;
7 — RP-SMA connector.

3.1 Connectors



DB-25 connector
Used to connect VRD-Client to vehicle using VRDC-OBDII interface cable;

RP-SMA connector
Used to connect Wi-Fi antenna;

SIM card slot
Used to fit a standard SIM card (mini-SIM);

Micro-USB connector
Used to connect VRD-Client to PC;

SMA connector
Used to connect GSM antenna.

3.2. Indicators

LED indication signals

Indicator	Color	Status	Meaning
CAN1	✳	Blinks green	Data receipt from vehicle via CAN1 interface
CAN2	✳	Blinks green	Data receipt from vehicle via CAN2 interface
K-Line	✳	Blinks green	Data receipt from vehicle via K-Line interface
J1708	✳	Blinks green	Data receipt from vehicle via J1708 interface
Link	✳	Blinks orange	Data receipt from VCI
	●	Lights orange	Device is connected to host server
Status	*Red indicator indicates operation with Wi-Fi*		
	✳ ✳	Frequently blinks red	VRD-Client is being connected to server via Wi-Fi
	✳	Blinks red	VRD-Client is connected to server via Wi-Fi, waiting for diagnostic session to start
	●	Lights red	Wi-Fi diagnostics is in process
	Green indicator indicates operation with GSM		
	✳ ✳	Frequently blinks green	VRD-Client is being connected to server via GSM
	✳	Blinks green	VRD-Client is connected to server via GSM, waiting for diagnostic session to start
	●	Lights green	GSM diagnostics is in process

4. Preparing for Operation

4.1. Selecting SIM card

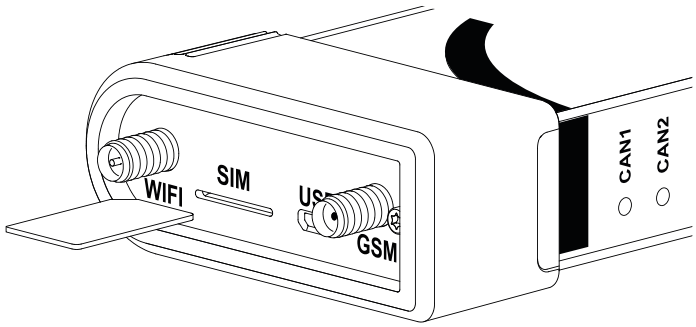
Warning! A SIM card is not available with the device.

VRD-Client is provided with a connector to fit a standard SIM card (mini-SIM).
If the size of the used SIM card and the slot do not match, a nano-SIM/micro-SIM adapter may be used.

When fitting a SIM card, make sure that:
— PIN request is disabled in SIM card settings;
— SIM card supports LTE operation;
— SIM card supports operation with M2M devices;
— SIM card has a positive account balance.

4.2. Fitting/removing the SIM card

Insert the SIM card into the SIM card slot. The SIM card shall be positioned **gold chip down** and **cut corner towards** the slot.



To remove the SIM card, briefly press it with a thin object until clamps click. The SIM card will partly come out of the slot, then remove it manually.

4.3. Antenna connection

VRD-Client connects to the server using Wi-Fi or mobile networks. Select the communication interface in the VRD Control software.

For remote diagnostics, connect the Wi-Fi or GSM antenna depending on configured communication interface.

The Wi-Fi antenna is provided with the RP-SMA male connector and is connected to the RP-SMA female connector on the VRD-Client labeled "WIFI".

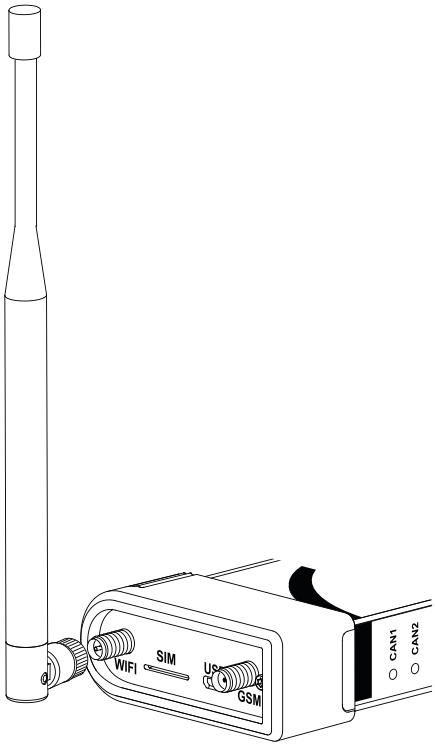


Figure 4 Wi-Fi antenna connection

The GSM antenna is provided with the SMA male connector and is connected to the SMA female connector on the VRD-Client labeled "GSM".

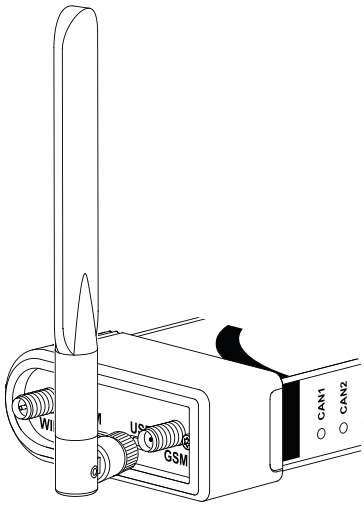


Figure 5 GSM antenna connection

Both antennas may be installed simultaneously.

5. VRD Client connection

5.1. Connection to VRD Control software

VRD Client receives and transmits data using one of communication interfaces (Wi-Fi or mobile).

To configure the communication interface in the VRD Control software, proceed as follows:
— Connect VRD-Client to PC using micro-USB cable;
— Open VRD Control and go to the Конфигуратор (Configurator) tab;
— Configure VRD-Client connection following instructions for using the VRD Control software.

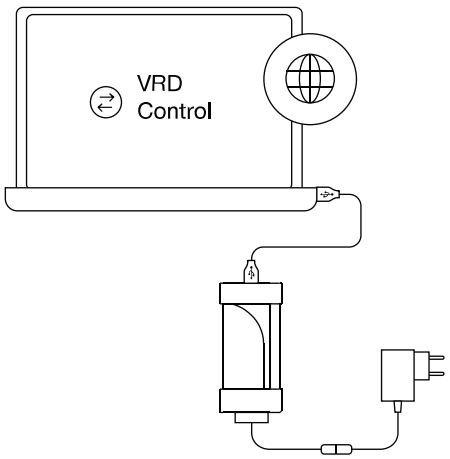


Figure 6 VRD-Client connection diagram

5.2. Connecting VRD-Client to vehicle

VRD-Client is connected to vehicle's OBD-II connector using VRDC-OBDII interface cable.

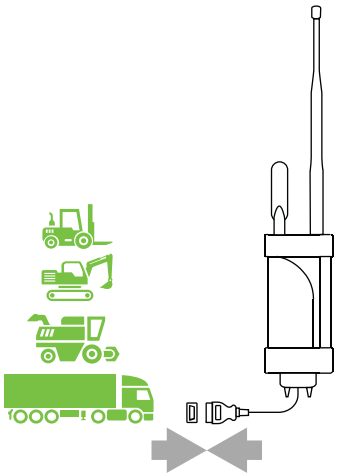


Figure 7 VRD-Client connection diagram