



TK-OBD2LOG

>>AutoGRAPH-PERIPHERAL<

VERSION
1.2
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USER MANUAL



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Introduction

This User Manual applies to the TK-OB2LOG device (hereafter - device) designed for scanning vehicle's diagnostic bus and transmitting the collected data to the AutoGRAPH on-board controller via the CAN bus.

The Manual is intended for specialists who are aware of maintenance and installation principles typical for motor vehicles and are proficient in using the electronic and electrical equipment of various vehicles.

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All information on functions, functional capabilities and other specifications related to TK-OB2LOG device, as well as all information contained in this User Manual is based on current data (at time of writing) and is deemed to be valid as of the date of publication. TechnoKom reserves the right to modify the information or specifications without prior notice or commitment.

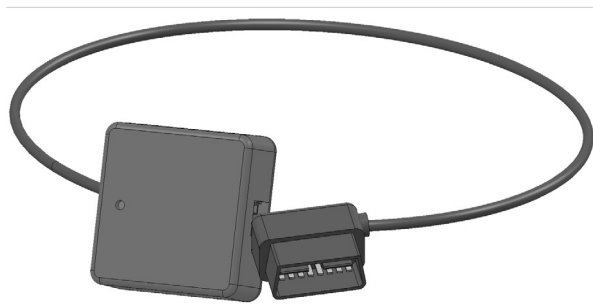
Technical Specifications

Description	Value
Supported Standards of OBD-II	ISO 15765-4 (CAN) ISO 14230-4 (Keyword Protocol 2000) ISO 9141-2 SAE J1850 VPW SAE J1850 PWM
Interface to Communicate with the AutoGRAPH controller	CAN (SAE J1939)
Operating Voltage, V	10...60
Average Power Consumption, mA*	80
Operating Temperature, °C	-40...+85
Dimensions, mm	50 x 50 x 20
Average life time, ages	10

* At $12,0 \pm 0,5$ V, 22 °C.

Scope of Supply

№	Description	Qty
1	TK-OBD2LOG device	1 pc.
2	Interface cable	1 pc.
3	Warranty card	1 pc.



①



②

Fig.1. Scope of supply.

Components

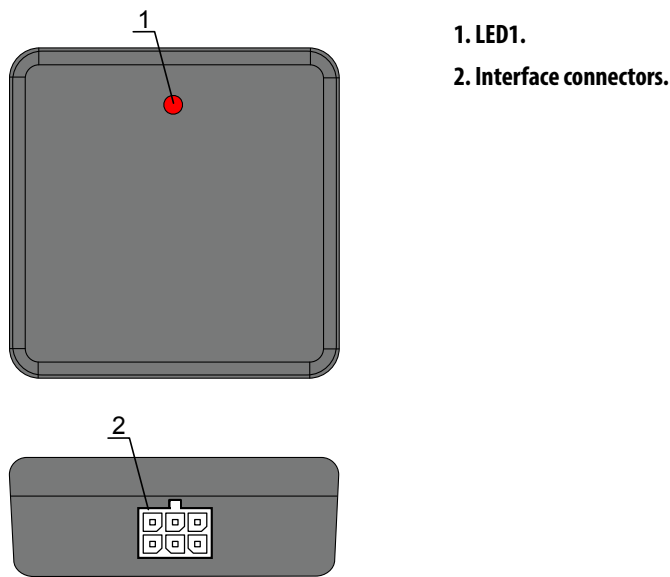


Fig.2. Components.

Interface Connector

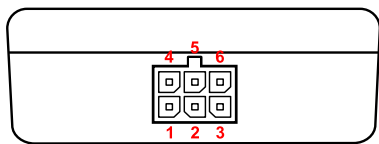








Fig. 3. Interface connector

Nº	Colour of a wire in a cable		Assignment
1		Red	+ Vin
2		---	Not used
3		Green with a white stripe	CAN (H)
4		Black	-Vin
5		---	Not used
6		Yellow with a white stripe	CAN (L)

Description of Operation

When powered on, the device will try to connect to ECU (Engine Control Unit) in order to receive a list of supported parameters. The received data is recorded in ROM of the TK-OB2LOG.

After connecting to the ECU the device scans CAN bus for required data once for 10 seconds and transmits collected data to AutoGRAPH controller via CAN bus using SAE J1939 protocol. A baud rate of transmission is 250 Kbit/s.

The device does not store or smooth the data, scanned from the ECU.



Before connecting to the ECU, the device sends a test message to the AutoGRAPH controller with ID '18FFFF01'. It means that the TK-OB2LOG is connected to the AutoGRAPH controller and now it is searching for the ECU.

This feature is available for TK-OB2LOG devices with firmware ver. OB2-1.1 or higher.

List of parameters, supported by the TK-OB2LOG, is described on a table 4.

Indication of operation

The TK-OB2LOG operation is indicated using the LED1, arranged on the front side of the device:

- **Periodic double flashes** – the device is trying to connect to the ECU.
- **Long three flashes** – the device has connected to the ECU and received a list of supported parameters.
- **Short flashes once a second** – the device is connected to a PC and transmits data via virtual COM port.
- **Not regular flashes of different duration** – normal mode of operation – the device scans the diagnostic line of vehicle and transmits collected data to the AutoGRAPH controller
- **Short flashes (0.5 sec) once a second** – programming mode of operation.

№	PID	Description	SPN	ID	Mask	Start bit	Coeff.	Shift	Comment
1	0x04	Calculated engine load value	92	18F00300	0xFF	16	1 %	0	Calculated by the ECU according to airflow data
2	0x05	Engine coolant temperature	110	18FEEE00	0xFF	0	1 °C	-40 °C	
3	0x0a	Fuel pressure	94	18FEEF00	0xFF	0	4 kPa	0	
4	0x0b	Intake manifold absolute pressure	106	18FEF600	0xFF	24	2 kPa	0	
5	0x0c	Engine RPM	190	18F00400	0xFFFF	24	0.125 rpm	0	
6	0x0d	Vehicle speed	84	18FEF100	0xFFFF	8	0.004 km/h	0	
7	0x0f	Intake air temperature	105	18FEF600	0xFF	16	1 °C	-40 °C	
8	0x10	MAF air flow rate	132	18F00A00	0xFFFF	16	0.05 kg/h	0	
9	0x11	Throttle position	51	18FEF200	0xFF	48	0.4 %	0	
10	0x1f	Time from engine start	247	18FEE500	0xFFFFFFFF	0	0.05 h	0	
11	0x21	Distance traveled with turned on malfunction indicator lamp (MIL)	914	18FEC000	0xFFFF	8	-5 km	-160 635 km	Transmitted as negative value
12	0x22	Fuel rail pressure (relative to manifold vacuum)	94	18FEEF00	0xFF	0	4 kPa	0	
13	0x23	Fuel rail pressure (diesel, or gasoline direct inject)	157	18FEDB00	0xFFFF	16	4 kPa	0	
14	0x2f	Fuel level	96	18FEFC00	0xFF	8	0.4 %	0	

№	PID	Description	SPN	ID	Mask	Start bit	Coeff.	Shift	Comment
15	0x31	Distance traveled since codes cleared	918	18FEC100	0xFFFFFFFF	32	5 m	0	Distance traveled after deleting errors
16	0x33	Barometric pressure	108	18FEF500	0xFF	0	0.5 kPa	0	
17	0x42	Control module voltage	158	18FEF700	0xFFFF	48	0.05 V	0	
18	0x43	Absolute load value	92	18F00300	0xFF	16	1	0	
19	0x45	Relative throttle position	51	18FEF200	0xFF	48	0.4 %	0	
20	0x59	Fuel rail pressure (absolute)	94	18FEEF00	0xFF	0	4 kPa	0	
21	0x5a	Relative accelerator pedal position	91	18F00300	0xFF	8	0.4 %	0	
22	0x5c	Engine oil temperature	175	18FEEE00	0xFFFF	16	0.03125 °C	-273 °C	
23	0x5e	Engine fuel rate	182	18FEE900	0xFFFFFFFF	0	0.5 l/h	0	liters per hour
24	0x61	Driver's demand engine - percent torque	512	18F00400	0xFF	8	1 %	-125 %	
25	0x62	Actual engine - percent torque	513	18F00400	0xFF	16	1 %	-125 %	
26	0x66	Mass air flow sensor	132	18F00A00	0xFFFF	16	0.05 kg/h	0	
27	0x67	Engine coolant temperature	110	18FEEE00	0xFF	0	1 °C	-40 °C	
28	0x68	Intake air temperature sensor	172	18FEF500	0xFF	40	1 °C	-40 °C	
29	0x74	Turbocharger RPM	103	18FEDD00	0xFFFF	8	4 rpm	0	

№	PID	Description	SPN	ID	Mask	Start bit	Coeff.	Shift	Comment
30	0x75	Turbocharger A Turbine Inlet Temperature	1180	18FE9800	0xFFFF	0	0.03125 °C	-273 °C	
		Turbocharger A Turbine Outlet Temperature	1184	18FE9700	0xFFFF	0	0.03125 °C	-273 °C	
31	0x76	Turbocharger B Turbine Inlet Temperature	1181	18FE9800	0xFFFF	16	0.03125 °C	-273 °C	
		Turbocharger B Turbine Outlet Temperature	1185	18FE9700	0xFFFF	16	0.03125 °C	-273 °C	
32	0x7f	Total Engine Run Time	246	18FEE700	0xFFFFFFFF	0	0.05 h	0	

Connection of TK-OBD2LOG

- For proper operation it is highly recommended to update firmware of the AutoGRAPH controller to ver. 9.93 or higher.
- The TK-OBD2LOG device is supplied with two connectors: primary interface connector (see fig.1) and standard 16-pins OBD-II connector.
- The OBD-II connector is intended to connect to the diagnostic line (to the OBD-II) of vehicle.
- The primary interface connector is intended to connect the device to the AutoGRAPH controller and to the vehicle power system (see table 3.).
- The connection diagram is shown on fig.3. The figure displays the TK-OBD2LOG connection to the AutoGRAPH-GSM controller. This diagram is applicable for another AutoGRAPH Series on-board controllers.

Connection diagram of TK-OBD2LOG to AutoGRAPH-GSM:

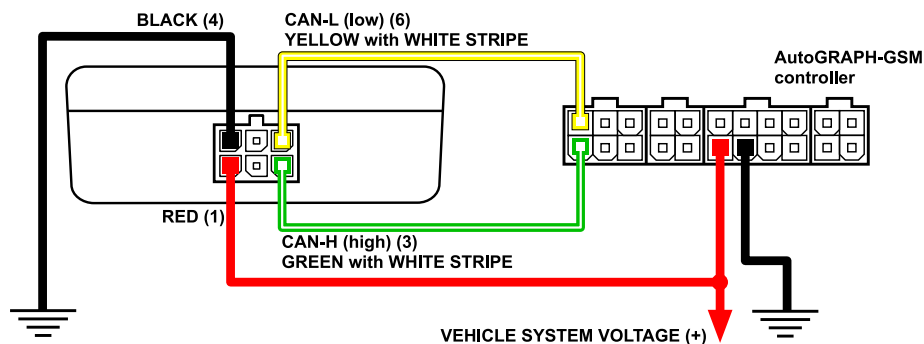


Fig.4. Connection diagram of TK-OBD2LOG to AutoGRAPH-GSM.

Configuration of AutoGRAPH controller

Before starting it is highly recommended to configure CAN bus of the AutoGRAPH controller. This section covers configuration procedure of the AutoGRAPH-GSM controller. Described information is applicable for other AutoGRAPH Series on-board controllers.

To configure the controller use AG.GSMConf program of ver. 3.1.3-rc3 or higher. The program can be downloaded from official website of TechnoKom Ltd.

To configure the controller:

1. Connect the controller to a PC.
2. If drivers of the controller are installed, the system will automatically identify the connected device. If the drivers are not installed, install them. The drivers can be downloaded from the official website of TechnoKom Ltd.
3. Run the AG.GSMConf program and go to the «CAN» tab (Fig.5, i.1).
4. Enable «Record any available data» option (Fig.5, i.2).
5. Specify a record period (Fig.5, i.3).
6. Save the setting to the controller by pressing the «Setup» button (Fig.5, i.4).
7. When settings are successfully applied to the controller you will see a message about successful saving of the settings in the status window (Fig.5, i.5).

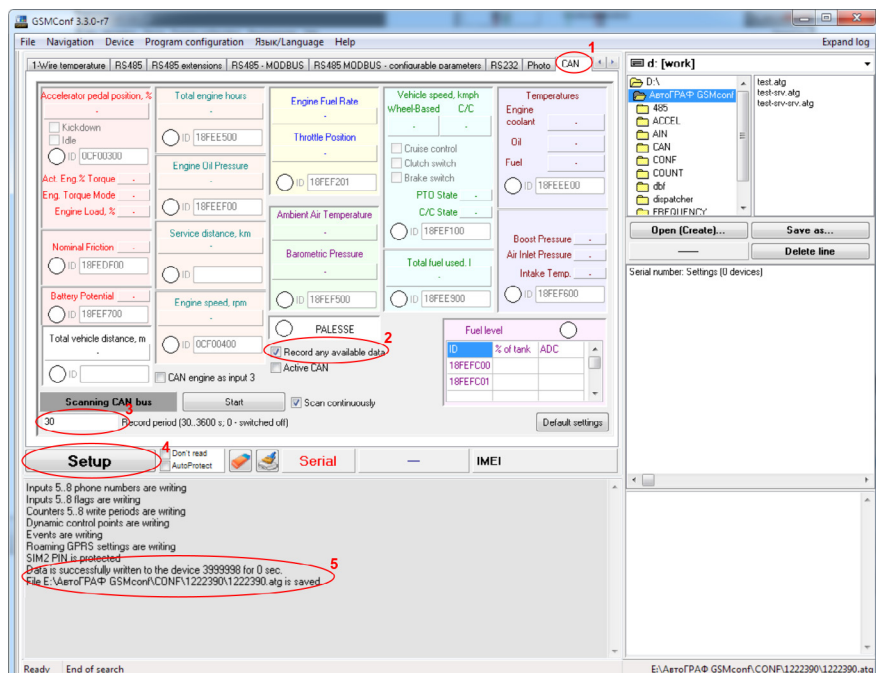


Fig.5. CAN Bus setting up.

Functional Test

Before starting, it is also recommended to make a functional test of the TK-OBD2LOG device. To do a test:

1. Connect TK-OBD2LOG device to vehicle diagnostic line.
2. Connect TK-OBD2LOG to the AutoGRAPH controller.
3. Connect TK-OBD2LOG and AutoGRAPH controller to vehicle power system.
4. Connect the AutoGRAPH controller to a PC using USB AM – USB miniB 5pin data-cable.
5. Run the AG.GSMConf program of ver. 3.1.3-rc3 or higher and go to the «CAN» tab.
6. Turn on the vehicle ignition and start the engine.
7. Press the «Start» button in the GSMConf program to start scanning.
8. Wait until the controller receives data from CAN bus: green indicator on the «CAN» tab will turn on and collected data will be displayed (see fig.6).
9. Turn off the ignition.
10. Disconnect the controller from the PC and close the AG.GSMConf program.
11. Start the engine and wait for a period while the controller scans CAN bus. The collected data will be recorded to flash memory of the controller at interval specified in the «Record period» field on the «CAN» tab.
12. Read the records from the controller using the AutoGRAPH 5 PRO Dispatch Software via USB and check whether CAN data is correctly recorded in the controller.

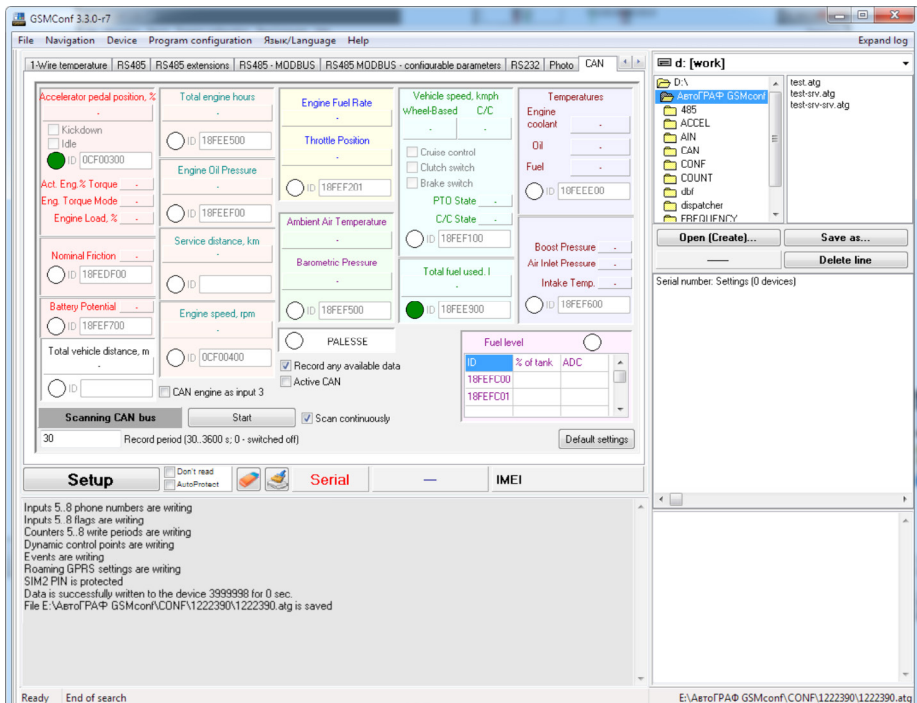


Fig.6. Functional test.

Retranslation mode

In retranslation mode, the TK-OB2LOG device scans the diagnostic line and send collected data to a PC via a virtual COM-port. Any diagnostic programs of second manufactures, which are support the OBD standard (SAE J1979) and connection to virtual COM-port, can be used for reading the data from the TK-OB2LOG.

To enable the retranslation mode:

1. Close all programs, which support connection to any devices, designed by TechnoKom Ltd. Also close all programs, which use virtual COM-port.
2. Connect the TK-OB2LOG to the diagnostic line of the vehicle and turn on the device.
3. Connect the device to a PC using USB AM – USB microB 5pin data-cable.
4. Run a diagnostic program and read the data.

Updating TK-OB2LOG firmware

Use the TK-OB2LOG_prog_v_1.0 program to updating the TK-OB2LOG firmware.

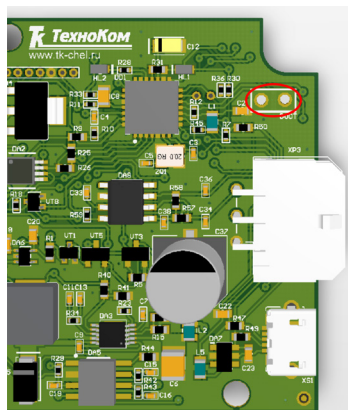


Fig.9. BOOT pins on the PCB.

To update the firmware:

1. Close all programs which support connection to any devices designed by TechnoKom Ltd. Also close all programs which use virtual COM-port.
2. Turn off the TK-OB2LOG.
3. Run the TK-OB2LOG_prog_v_1.0 by opening the TK-OB2LOG_prog_v_1.0.exe file.
4. Close the BOOT pins (see fig.9) and connect the TK-OB2LOG to a PC using USB AM – USB microB 5pin data-cable.
5. Make sure, that the device switch to the Programming mode. In this mode, the LED1 of the device flashes once a second. Otherwise, retry the 2-4 steps.
6. Press the «Update» button in the program.
7. After updating the firmware, disconnect the device from the PC and open the BOOT pins.



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