RS232. Connecting TPMS
TM-508 (AIRGUARD)

User Manual

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Necessary tools, devices, materials

To connect Galileosky tracking device (hereinafter tracking device) it is necessary to have:

1. Electrical tools.
2. A computer running Windows with the installed service software for configuration of Galileosky tracking devices - "Configurator". We recommend you to install the latest version of the service software from our site https://galileosky.com/podderzhka/programmyi.html.
General Information

Galileosky tracking devices (hereinafter tracking device) are fitted with the function of operation with Tire Pressure Monitoring System TM-508 (AIRGUARD). Tire Pressure Monitoring System (TPMS) is a system for remote wireless measurement of pressure and temperature in tires of the vehicle.

If the tire pressure is low, the rolling resistance grows dramatically. It leads to fuel consumption rise, increased wear of the tire and difficulties during manoeuvring. TPMS allows to determine the exact tire pressure and temperature in real time mode and to forestall accidents connected with tire damage.

After connecting to the Galileosky tracking device the TPMS sends data to the monitoring server in 0x5C tag in Galileosky protocol format.


TPMS consists of the following functional parts:

1. Display (Pic. 1) is the device where all information about the tire pressure is shown. The display is also used to set the TPMS configuration. There is an additional connector on the left-hand side of the display to connect directly to the tracking device via RS232 interface.

2. Pressure sensors (Pic. 2). There are both external (screwed onto tire valve) and internal (are installed into the tire) pressure sensors. In case of any differences between the data received from the sensors and base value the information about current pressure is shown on the display and the signal is heard.
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3. Repeater (Pic. 3) is a device used to strengthen and transmit a signal from the sensors installed on the long vehicles.

ATTENTION! This functionality is implemented by means of Easy Logic technology (https://galileosky.com/products/easylogic.html). It is necessary to use tracking devices with Easy Logic support. There are two ways to check if your tracking device supports Easy Logic technology:

- the tracking device specification must contain an abbreviation (Al) or there must be an abbreviation “(2)” near IMEI on the label (you can find it on the bottom of the device body) (Pic. 2).
- send a "Hardversion" command to the tracking device. If non-zero numbers will appear in the decimal response, then it is possible to work with custom algorithms (for example, the answer is: HARDVERSION=21,8243).

In case the mentioned functionality is used on the Galileosky v.2.X, v.5.X tracking devices the firmware of the tracking device should be 230.5 or later. TPMS can be used with Galileosky Base Block or Galileosky 7.0 with any firmware version.
Connecting TPMS

Connecting TPMS to the tracking device is carried out via RS232 interface in accordance with schemes in Picture 5 of the manual.

**ATTENTION!** Grounds (GND) of the TPMS and Galileosky tracking device should be connected, RS232 contacts should be connected in accordance with the scheme: RX of TPMS with TX of the tracking device, TX of TPMS with RX of the tracking device. TPMS needs separate voltage supply.

![Picture 5: Schemes of connecting to Galileosky tracking device](image-url)
Tracking device setting for work with TPMS

The tracking device setting for TPMS connection is carried out via Configurator:

1. Connect TPMS to the tracking device
2. Connect Galileosky tracking device to the PC and launch the Configurator.
3. Go to the "Settings" tab of the Configurator → "Track" and choose "dynamic" from the "Archive structure mode" list (Pic. 6);

![Pic. 6 Dynamic archive structure mode setting]

**ATTENTION!** If the Galileosky Base Block or Galileosky 7.0 tracking device is used, then it is not necessary to change the archive type.

4. Go to the "Settings" tab → "Protocol" and tick "PressurePro" in the "Main Packet" (Pic. 7);

![Pic. 7 Main packet setting]

5. Go to the "Settings" tab "Digital inputs" and put "nothing" for "RS232[0] peripheral type" (Pic. 8);

![Pic. 8 RS232 setting]

6. The settings are recorded to the tracking device by "Apply" clicking.
7. Go to the "Commands" tab and run "script galileosky/ATPMS" command (Pic. 9);

**ATTENTION!** The algorithm is downloaded from the server that is why a working SIM-card with GPRS support should be inserted into the tracking device.
8. Wait till the command is run by the tracking device. To do that go to the "Device" tab some minutes after the command was sent to the tracking device and make sure that there is information about the installed algorithm in the Easy Logic line (Pic. 10);

9. On the "Troubleshooting" tab tick "Algorithm and script diagnostics" (Pic. 11).

During the algorithm operation the diagnostic messages with "ATPMS" prefix are shown.

a. For example, the message "ATPMS. wheel[2] converted pressure is 22 psi" means that the pressure value for the wheel with the number 36FBE7 equals 22 psi by the information received from the tracking device.

b. If there is no information about the pressure and temperature for a long time and the message "ATPMS. no response received" appears constantly, it means the connection between the tracking device and the TPMS is absent.
The monitoring software setting

Launch the monitoring software and make sure that the data are coming from TPMS to the software (Pic. 12).

If it is necessary, add pressure and/or temperature sensor in accordance with the recommendations of the monitoring software manufacturer. It should be taken into account, that the information is sent in PSI format and if you want to convert it into other units of pressure the following relation should be noted:

1 psi [psi] = 0,0680459639099759 physical atmosphere (atm)
1 psi [psi] = 0,0703069579640175 kilogramme-force per square centimetre [kgf/cm²]

Connection of Tire Pressure Monitoring System to the tracking device is completed, the tracking device is ready to operate.

RSA “Galileosky”, LLC produces satellite monitoring equipment for GPS and GLONASS real time vehicles monitoring. The tracking devices determine the mobile object location recording the time and route as points with geographical coordinates and send the data to the server to be further processed and sent to the traffic controller panel.

In addition, a number of other vehicle parameters are recorded: the state of analog and discrete inputs of the tracking device and the state of digital interfaces.

The tracking devices can be used in any vehicle.