Connection of Thermal Resistors

User Manual

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Connection of Thermal Resistors

Necessary Tools, Devices, Materials

For thermal resistors connection to the Galileosky GPS/GLONASS tracking device (hereinafter – tracking device) one should have:

1. Electrical tools.
2. Set of connecting wires.
3. Windows-based computer with the installed program of configuration of the tracking devices – "Configurator". It is recommended to install the latest version of the program from the website https://galileosky.com/podderzhka/programmyi.html
General Information

Thermal resistor (thermistor) — a semiconductor resistor, in which dependence of electrical resistance of the semiconducting material on the temperature is used. There are some features, which are typical for the thermal resistor: high resistance coefficient (TCR) (exceeding this coefficient of metals in tens of times), device simplicity, ability to operate in different weather conditions by considerable mechanical loads.

Thermal resistors are widely used in fire protection systems, temperature measuring and controlling systems, systems of the thermal control of the units operation.

Thermal resistor (Pic. 1) is produced in the form of canes, pipes, discs, plates, beads and thin plates mainly by means of powder metallurgy methods. Its size can vary from 1–10 mym up to 1–2 cm.

There are two types of thermal resistors: with positive temperature coefficient (PTC, Positive Temperature Coefficient), i.e increasing their resistance by the temperature rise, and with negative one (NTC, Negative Temperature Coefficient) – decreasing the resistance with the temperature rise.
Connection of Thermal Resistors
to the Discrete Analog Input

Connection of thermal resistors to the tracking device is carried out according the scheme, shown in Picture 2.

**ATTENTION!** Ra resistor rating is chosen as the average one to the resistance of Rt thermistor within the range of measured temperatures (for example, Rt=10kOhm and Ra=10kOhm), voltage values at the discrete-analog input will be changed more or less linearly, and it assures more accuracy.

Setting of the tracking device’s discrete-analog input for the thermal resistor connection is carried out via the Configurator:

1. go to «Settings» tab -> «In/Out» of the Configurator. For the input, which the thermal resistor is connected to, choose «middle» (Pic. 3);

2. press «Apply» button.
3. make sure that the tracking device receives data from a thermal resistor: for this purpose, go to «Device» tab of the Configurator and check the readings availability at the chosen input (Pic. 4):

<table>
<thead>
<tr>
<th>Identification data</th>
<th>Analog ins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Device 50</td>
<td>In 0 4330</td>
</tr>
<tr>
<td>IMEI 868204007518813</td>
<td>In 1 0</td>
</tr>
<tr>
<td>Firmware 223</td>
<td>In 2 0</td>
</tr>
<tr>
<td>Type GALILEOSKY GPS/ГЛОНАСС v5.0</td>
<td>In 3 0</td>
</tr>
</tbody>
</table>
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Setting of the Data Transmission to the Monitoring Server

For setting of the data transmission to the monitoring server:

1. go to «Settings» tab -> «Protocol» of the Configurator, set the main packet (Pic. 5), ticking the input, which the thermal resistor is connected to, and press «Apply» button;

2. check data availability on the monitoring server (Pic. 6);

3. make a calibration table for the correct conversion of received values into the temperature ones (Pic. 7).
Connection of Thermal Resistors

Results of the temperature measuring are displayed in the diagram (Pic.8);

Thermal resistor connection to the Galileosky tracking device is finished, tracking device is ready to operate.