DAI. Connection of Pulse Flow Meter

User Manual
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Necessary Tools, Devices, Materials

To connect Galileosky tracking device (hereinafter – tracking device) you should have:

1. Electrical tools.
2. Multimeter.
3. Set of connecting wires with fuses.
General Information

Galileosky devices have a function of counting of analog pulses. As a pulse source pulse fuel flow meters and flow meters of other liquids of different manufacturers can be used (Pic. 1).
Connection of a Pulse Flow Meter

Connection of a pulse flow meter to a Galileosky device should be performed in accordance with the scheme of Picture 2 of this manual. The pulse output of a flow meter is to be connected to one of discrete and analog inputs (hereinafter – DAI) of the device.

To adjust the DAI to operate with a pulse flow meter it is necessary to connect the device to the Configurator, go to “Settings” tab –> “Inputs/Outputs” (Pic. 6) and to perform the necessary actions for each custom input.

1. Stage 1, measurement of the maximum amplitude of the frequency signal:
   - Set the filter type as “middle”;
   - Set the filter length as “1”;
   - Start the engine and wait for work of a pulse flow meter;
   - Go to the “Device” tab and slightly increasing the engine speed for one or two minutes detect the maximum value of the amplitude of the signal which comes to the custom input (Pic. 3).

2. Stage 2, filter setting to operate with a pulse flow meter (Pic. 4):

   ![Pic. 2](image-url)
   Scheme of pulse flow meter connection

   ![Pic. 3](image-url)
   Measurement of maximum amplitude of frequency signal
DAI. Connection of Pulse Flow Meter
(version 4 dated from July 5, 2018)

- Set the filter type as “impulse count”;
- Set the filter length as «1». In case if the tracking device counts extra pulses, it is necessary to increase the filter length, in accordance with the recommendations of Appendix №1;
- Use sliders to set discrete signal limit to the value, calculated at the first stage and divided by 2 (two);
- Set or remove the tick in the “Clear the pulses after points recording” field:
  a) If a tick is set pulse counter is reset and restarted in the moment of writing the next point;
  b) If there is no a tick pulses are counted cumulatively. Pulse counter is reset and restarted upon reaching the maximum value of 65535;
- Go to “Settings” tab –> «Protocol» and in main packet settings tick the fields of those discrete analog inputs to which the pulse flow meter is connected (Pic. 5);
- Click “Apply” button.

Values of DAI, which are set to count pulses are displayed in the “Device” field –> “Analog inputs” of the Configurator (Pic. 6).
After DAI setting has been completed monitoring software should be configured so that it could accept the measured values and mathematically calculate the pumped liquid volume in liters.

When the flow meter connection is completed you should check if the signal comes to the monitoring server correctly. To check the correctness of the signal you may compare the inputs values, which are displayed in the “Device” tab (Pic. 5) to the messages which come to the monitoring server (Pic. 7).

Connection of the pulse flow meter to Galileosky tracking device is completed, the 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.
Appendix №1

Recommendations for configuring the filter length for a pulse flow meter.

In real conditions of Galileosky tracking device operation pulse counting can be complicated by hindrances and short-term voltage drops in an on-board network. To minimize the specified problems Galileosky tracking devices are recommended to be connected to plugs of the storage battery.

In case if the Galileosky tracking device is connected to plugs of the storage battery and counts extra pulses at the moment of engine start (or at other moments) it is necessary to connect the tracking device to the Configurator, go to “Settings” tab -> “Inputs/Outputs” and set the filter length of custom input on value according to table №1 of this appendix.

<table>
<thead>
<tr>
<th>№ n/n</th>
<th>Frequency of impulses of a flow meter, Hz</th>
<th>Filter length</th>
</tr>
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<tr>
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<td>2 000</td>
<td>1</td>
</tr>
<tr>
<td>2</td>
<td>1 000</td>
<td>2</td>
</tr>
<tr>
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<td>4</td>
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<td>16</td>
<td>128</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>256</td>
</tr>
</tbody>
</table>

Table № 1
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Also for filter length setting it is possible to use the InCfg command.

Command format
InCfg_num_in ft,ft,up_low,up_hi,down_low,down_hi,imp_null

Parameters
- num_in – an input number, beginning from 0;
- ft – filter type
  - 0 – mean value computation;
  - 1 – pulse count;
  - 2 – frequency count
  - 3 – impulses counting from two simultaneously connected sensors.
- fl – filter length. It is used for average and discrete signal function;
- up_low – lower limit of a discrete signal triggering, [mV];
- up_hi – upper limit of a discrete signal triggering, [mV];
- down_low – lower limit of a discrete signal failure, [mV];
- down_hi – upper limit of a discrete signal failure, [mV];
- imp_null – pulses counter behavior: 1 – counter is set to zero, 0 – counter continues increasing.

Explanation
Allows one of 8 analog/discrete inputs being configured.

Example
Request: InCfg0 1,16,7300,7300,7300,7300,0
Reply:
INCFG0:FiltType=1,FiltLen=16,UpLow=7300,UpHi=7300,DownLow=7300,DownHi=7300,ImpNull=0;