DAI. Current sensors connection

User Manual

www.galileosky.com
Necessary tools, devices, materials

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

1. Electrical tools.
2. A multimeter.
3. Set of connecting wires with fuses.
**Possible variants of current sensors**

It is possible to connect different sensors with unified current output (hereinafter - current sensors) to Galileosky tracking devices. This sensor transforms measured pressure, fuel level, temperature and other values into unified 4-20 mA analog signal.

The sensors can be connected to discrete-analog inputs (DAI) of any Galileosky tracking devices. Regardless of the type of the tracking device, DAI marking is the same and has the following form: IN0, IN1, etc.

Different devices can be used as current sensors, for example:

1. **Current transformer** (Pic. 1) is a device, which allows to transform direct and alternative current into unified 4-20 mA analog signal;

![Current transformer](image1.png)

Pic. 1
Current transformer

2. **Pressure sensor** (Pic. 2) is a device, which transforms measured pressure value into unified 4-20 mA analog signal;

![Pressure sensor](image2.png)

Pic. 2
Pressure sensor

3. **Fuel level sensor** (Pic. 3) is a device, which transforms the measured fuel level value into unified 4-20 mA analog signal.

![Fuel level sensor](image3.png)

Pic. 3
Fuel level sensor
Current sensor connection

To get and process the signal from the current sensor it is necessary to connect the sensor to the Galileosky tracking device in accordance with the scheme:

1. **Current sensor with an active output** (Pic. 4) is a sensor, which does not need any additional power supply;
2. **Current sensor with a passive output** (Pic. 5) is a sensor, which needs an additional power supply to be connected.
It is necessary to remember, that the current sensor working with tracking device measures not current rate on the current sensor output but voltage, which is equivalent to the electrical current on R1 resistor.

To configure the DAI of the tracking device to operate with current sensors connect the tracking device to the Configurator, go to the "Settings" tab -> "Inputs/Outputs" and do the following for every input to be configured:

1. set the "mean value" filter type;
2. set the filter length as "5", further the length can be increased in order to exclude false responses on the input;
3. use sliders to set discrete signal limits (in millivolts). Operating zone corresponds to the operation diapason of the sensor. It means that the lower limit of the Operating zone equals to 4mA signal of the sensor and the upper limit equals to 20mA of the current sensor. Non-operating zone is a mark of disruptive discharge or short circuit in the sensor. You may also set the discrete signal limits by adding digital values into fields "Operating zone" and "Non-operating zone";
4. click "Apply" button.

Picture 6 shows the example of settings of Input 0 (IN0) for connection schemes of Pictures 4 and 5.
IN0 input

- Operating zone is from 1700 to 9780 mV, the whole-number value that is equal to sensor’s operating diapason, is transmitted.

- Non-operating zone is from 10000 to 33000 mV, the whole-number value which equals to electrical current passing through the sensor and which means disruptive discharge or short circuit in the sensor.

Input state in indifference zone (from 9780 to 10000) corresponds to the previous input state.

State of tracking device DAI, which are set to operate with a current sensor, is displayed in field “Analog inputs” in the “Device” tab of the Configurator:

- If the input is in working state, it shows the current input voltage in red (in millivolts).

After the analog inputs were set to operate with current sensors the configuration of monitoring software should be done.
Tracking device setting for work with monitoring software

To transmit the data to the monitoring software in whole-number values, "Filters" functional can be used. You can find the corresponding manual on Galileosky web-site -> "Support" -> "User Guides" -> "Service functions" -> "Service. Using Filters for Converting Data" https://galileosky.com/podderzhka/dokumentaciya.html

User should determine the value, the measured value should be converted into: unified 4-20 mA analog signal or necessary units of measurement, for example: kPa, °C, Litres. Converted value will be sent to the monitoring server.

Go to the "Filters" tab in the Configurator and set the calibration chart. An example of kPa conversion is shown in Picture 8.

To send data to the monitoring server it is necessary to configure the corresponding input at the "Settings" tab -> "Protocol". An example of IN1 setting is shown in Picture 9.
DAI. Current sensors connection
(version 1 of 11.01.2019)

To complete the current sensor connection check if the signal is transmitted to the monitoring server. If the setting was carried out in a proper way then the value, which corresponds to the input value (Pic. 10), will be shown in the monitoring software.

<table>
<thead>
<tr>
<th>Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.45</td>
<td>temp_int=33, adc3=0, adc13=0, valid=15, soft=19, rec_sn=8217, I/O=0.03e00</td>
</tr>
<tr>
<td>2.108</td>
<td>temp_int=33, adc2=0.005, adc12=5, valid=15, soft=19, rec_sn=8218, I/O=0</td>
</tr>
</tbody>
</table>

Connection of current sensor 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.