RS232. Integration with System of Driving Safety AIDRIVING

User Manual
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Necessary Tools, Devices and Materials

To connect system of driving safety AIDRIVING (hereinafter – system of driving safety) to Galileosky tracking devices (hereinafter – tracking devices) one should have:

1. Electrical tools.
2. Set of connecting wires.
3. Windows-based computer with the installed program of configuration of Galileosky tracking devices – “Configurator”. You can download the latest version of it here https://galileosky.com/podderzhka/dokumentacziya.html
AIDRIVING C7 system of driving safety (pic. 1) is a software device set which is able to control the environment ahead of a vehicle and driver’s actions at the wheel thanks to the technology of computer vision and the advanced algorithms of processing visual information. You can learn more detail about the system description in the manufacturer’s site - www.aidriving.com

The system can follow other vehicles, pedestrians, bikers, motorcyclists along the path and control the neighboring lane markings on the road (pic. 2), sending audio messages if there is a dangerous situation of approaching and possible collision or crossing the lane marking.

Besides with the help of another camera the system controls the driver’s behavior along the path, monitoring driver’s eyes closing, yawning, distraction of attention from the road, phone using and smoking (Pic. 3). Timely audio signals about the signs of fatigue help to increase driving safety.
The tracking device carries out the function of transmitting information from the system of driving safety to the monitoring software about all the events on monitoring the surroundings. Besides, when using the system with Galileosky Base Block and Galileosky 7.0 tracking devices there is an opportunity to send a photo taken at the moment the accident has happened.

The driving safety system notifies the driver with various audio buzzer signals, which can be not clear. Galileosky Base Block and Galileosky 7.0 tracking devices have an extra function of notifying the driver about the concrete event type by means of audio files located in the “adas” catalog of microSD-card. You need to create the audio files on your own and save them in *wav format in accordance with p.10 of the following manual. Galileosky Base Block and Galileosky 7.0 tracking devices should have the function of autoinformer.

ATTENTION! The mentioned functions can be implemented by means of algorithms (hereinafter – Easy Logic). To work with AIDRIVING system it is necessary to use the tracking devices with Easy Logic technology support (https://galileosky.com/products/easylogic.html). There are two ways to define whether Easy Logic can be used with the tracking device or not:

- If there is {A1} abbreviation in the tracking device specification or {2} before IMEI on the label of device box (Pic. 4).
- By sending “Hardversion” command to the tracking device, if the response contains numbers different from zero after comma, cooperation with Easy Logic is possible (for example, response: HARDVERSION=21,8243)
The function of working with the system of driving safety can be implemented in Galileosky tracking devices with RS232 interface, in any firmware versions for Galileosky Base Block and 7.0 devices and Galileosky tracking devices v. 2.X (Except for Lite) and v. 5.X with firmware not less than 229.X.

To transmit the photo of the event to the monitoring software or to play the notifying audio file it is necessary to use tracking devices that have RS232 interface and microSD-card slot for Galileosky Base Block tracking devices with firmware 15.4 or higher or 7.0 devices with 2.0 firmware or higher.
Pre-Setting of the Driving Safety System

Pre-setting of the driving safety system is carried out by means of special software, "Roadeye", installed for smartphones or tablets based on Android OS. Go to Google Play app-store and install the software on your mobile device (Pic. 5).

After connection with the server via Wi-Fi is installed it is necessary to carry out its calibration (Pic. 6).

First, you need to set detection of the lane markings on the road (Pic. 7), adjusting the parameters of the first camera placement with respect to the axis of the vehicle.
After that it is necessary to set fixation of the driver’s face (Pic. 8), adjusting the second camera with respect to the driver’s head.

**Pic. 7**
Setting the lane marking detection

**Pic. 8**
Setting videofixation of the driver’s face
Connecting the System via RS232 Interface

Installation of the device to the tracking device is carried out in accordance with the following scheme (Pic. 9).

ATTENTION! Grounds (GND) of the tracking device must be connected. Power to the sensor is provided separately.

1. Connect the system’s main block to the tracking device;
2. Connect the tracking device to the PC;
3. Launch Configurator software on the PC;
4. Go to the tab “Settings”, to the tab “Track”, select “dynamic” parameter in the archive structure mode (Pic. 10) (this action is not necessary for Base Block tracking devices);
ATTENTION! Setting dynamic archive structure mode for tracking devices Base Block and 7.0 is not needed.

5. Go to the tab “Protocol” of Configurator software, tick “User Tag 0”, “User Tag 1”, “User Tag 2” for the main packet (Pic. 11);

6. Go to the tab “Digital inputs” of Configurator software and select “nothing” for the parameter “RS232[0] peripheral type” (Pic.12);

If you are planning to transmit photos with Galileosky Base Block or Galileosky 7.0 tracking devices, then for “RS232[0] peripheral type” set the parameter (pic. 13);

7. Click “Apply” button;

8. Download the algorithm to the tracking device:

8.1 If you do not need to transmit photos to the monitoring server and/or play notifying audio files or you use 2.X or 5.X tracking devices, then go to tab “Commands” of Configurator software and send «script galileosky/aidriverNoPhoto» command (Pic. 14);
8.2 If you need to transmit photos to the monitoring server and/or play notifying audio files, then go to tab “Commands” of Configurator and send command “script galileosky/aidriver” (pic.15);

ATTENTION! The algorithm is downloaded from the server, that’s why the tracking device should contain a working, GPRS-supported SIM-card.

9. Wait till the command is confirmed by the tracking device, for that in a few minutes after the previous command was sent by the tracking device run the command “script” and make sure the reply contains the information about the installed algorithm:

9.1. Checking algorithm downloading without photo sending (pic.16);
9.2. Checking algorithm downloading with photo sending (pic.17);

10. If you need to play an audio file notifying about concrete events, then create “adas” catalog in the root folder of microSD-card, where you can locate recorded audio files with the following format - *.wav, 16 khz, mono, 16 bit. The titles should correspond to the event code in table 1 (for example, 1.wav or 31.wav).
Setting the Monitoring Software

After setting the tracking device, the monitoring software settings should be completed. If your monitoring software does not support processing the user tags, you need to work out and install the software in the monitoring server, which is able to process data in accordance with the protocol of exchange between the tracking device and server. Description of the exchange protocol of tracking devices and the server is given in the document “Galileosky Terminals Server Exchange Protocol”, which you can find in our site in the tabs Support -> User Guides -> Galileosky protocol https://galileosky.com/podderzhka/dokumentacziya.html.

The tracking device transfers data to the monitoring software in 0 and 1 user tags. What’s more tag 0 transfers the event type which is equal to values described in the table below. One tag transmits a concrete event code.

<table>
<thead>
<tr>
<th>Event code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Forward collision warning level 1</td>
</tr>
<tr>
<td>2</td>
<td>Forward collision warning level 2</td>
</tr>
<tr>
<td>3</td>
<td>Vehicle slide warning</td>
</tr>
<tr>
<td>4</td>
<td>Forward vehicle start warning</td>
</tr>
<tr>
<td>11</td>
<td>Left lane departure warning</td>
</tr>
<tr>
<td>12</td>
<td>Right lane departure warning</td>
</tr>
<tr>
<td>21</td>
<td>Pedestrian collision warning level 1</td>
</tr>
<tr>
<td>22</td>
<td>Pedestrian collision warning level 2</td>
</tr>
<tr>
<td>31</td>
<td>Driver closed his eyes</td>
</tr>
<tr>
<td>32</td>
<td>Driver is yawning</td>
</tr>
<tr>
<td>33</td>
<td>Driver is looking away</td>
</tr>
<tr>
<td>34</td>
<td>Driver is smoking</td>
</tr>
<tr>
<td>35</td>
<td>Driver is talking on the phone</td>
</tr>
<tr>
<td>36</td>
<td>Driver is not found</td>
</tr>
</tbody>
</table>
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In case there is a problem with data transmission with the system of driving safety due to power off, wires break and so on, then the fact of mistake occurrence is recorded in User tag 1 and transmitted with the following values (Table 2):

<table>
<thead>
<tr>
<th>Event code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>False data are received</td>
</tr>
<tr>
<td>10</td>
<td>The connection with the device is broken</td>
</tr>
</tbody>
</table>

In monitoring software data transmission about events and photos may look in the following way (Pic. 18):

Connection of the system of driving safety AIDRIVING C7 to Galileosky tracking device is completed, the tracking device is ready for use.

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.