1-Wire. Connection and Operation with iButton Keys and RFID Cards

User Manual

www.galileosky.com
1-Wire. Connection and operation with iButton keys and RFID-cards
(version 5 dated from August 7, 2018)

Contents

Necessary Tools, Devices, Materials ........................................................................3
General Information .........................................................................................................4
Readers Connection and Signal Processing .................................................................6
  Adding a key to the list of trusted keys in the tracking device without
  a micro-SD card ...........................................................................................................7
  Adding a key to the list of trusted keys in the tracking device with a
  micro-SD card ...........................................................................................................8
  Data transmission to the monitoring software .........................................................9
Driver identification by means of iButton keys .........................................................11
Signaling setting to work with iButton keys .............................................................14
Configuring the control of executive mechanisms ..................................................15
Necessary Tools, Devices, Materials

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

1. Electrical tools.
2. Set of connecting wires with fuses.
3. Windows-based computer with the installed program of configuration of Galileosky tracking devices — "Configurator". You can download it here https://galileosky.com/podderzhka/programmyi.html
General Information

It is possible to connect different sensors and devices working via 1-Wire interface to the Galileosky tracking device, and their simultaneous work is supported.

1-Wire interface is bi-directional bus of communication for devices, developed by Dallas Semiconductor company and provide low-speed data transmission. One of the features of the bus is the ability to use only two wires: data and ground. The contact which is used for data transmission can be also used as the source of parasite power. In some cases, a separate wire can be used for connecting the external power supply.

The following devices can be used as 1-Wire sensors:

1. **iButton key reader** (Pic. 1) – a contact device for reading and data recording at the moment of contact with an iButton identification key (hereinafter – IK);

2. **RFID-tags readers** (Pic. 2) – a device working on the principle of the radio-frequency contactless identification. Allows you to read information from RFID tags using radio waves.

You can do the following with the help of iButton keys and RFID-tags:
1-Wire. Connection and operation with iButton keys and RFID-cards (version 5 dated from August 7, 2018)

- Configure driver or object identification;
- Control signaling enabling/disabling;
- Control different executive mechanisms enabling/disabling.
Readers Connection and Signal Processing

To receive and process the signal from the iButton IK or the RFID-tag it is necessary to connect the readers to the tracking device:

- Connection to Galileosky v5 tracking device is carried out in accordance with the scheme of Picture 3.

![Picture 3]

Connection scheme of iButton (RFID) readers and v5 tracking devices

- Connection to Galileosky v1.x, v2.x tracking devices is carried out in accordance with the scheme of Picture 4.

![Picture 4]

Connection scheme of iButton (RFID) readers and v1.x; v2.x tracking devices

Tracking device processes the signal from the reader in accordance with an internal algorithm - at the time of IK applying to 1-Wire and GND contacts the number of the key is entered into the memory, a point is recorded and the four low-order bytes excluding checksum are sent to the server. At disconnection of the key there is the number zeroing, record of a point and sending the message to the server.

To control the signaling trusted keys can be used. The trusted keys are the IKs stored into the memory of the tracking device or saved to the micro-SD card. In the tracking device without
Adding a key to the list of trusted keys in the tracking device without a micro-SD card

To add IK to the list of trusted keys in the tracking device it is necessary to execute the following actions.

1. Start the Configurator and go to the “Device” tab.
2. Attach the iButton key to the 1-Wire and GND contacts and fix the value of the trusted key ID in the “iButton” field of the “Device” tab (this value will be displayed in brackets Pic. 5).
3. Go to the “Settings” tab –> “Digital inputs” and enter the received above value in the “Key 1” field of the section “iButton keys” (Pic. 6).
4. Press “Apply” button.
5. In case if you are going to use several iButton keys, you need to enter the keys IDs in the “Key 2... Key 8” fields.
6. When applying an IK with one of the set identifiers, the corresponding bit will be set in the "iButton Keys" field of the “Device” tab (Pic. 7).
Adding a key to the list of trusted keys in the tracking device with a micro-SD card

To add a key to the list of trusted keys, it is necessary to execute the following actions:

1. Eject the micro-SD card from the tracking device and insert it into the computer;
2. Start the Configurator and go to the «iButton» tab;
3. From the dropdown menu select the disk that corresponds to the micro-SD card (Pic. 8);
4. Enter the numbers of the keys; the keys can be entered in decimal or hexadecimal form, and the value in the other column is converted automatically;
5. Press the "Save to card" button to save the changes to the micro-SD card (Pic. 9).

The list of the keys is stored in the keys.bin file, you can copy it and use in micro-SD cards of other tracking devices.
Data transmission to the monitoring software

Let’s consider the transmission of data on the iButton keys on the example of the display of data in the monitoring software (hereinafter – monitoring software).

To send data on the work with the iButton keys readers to the monitoring server it is necessary to perform the following steps.

1. Start the Configurator and go to the “Settings” tab -> “Protocol”.
2. In the main packet settings tick the following fields: “Status of device”, “iButton”, “iButton2” (Pic. 10).
3. Press “Apply” button.
4. Attach the IK to the reader.
5. Go to the “Messages” tab of the monitoring software and specify the object and parameters to generate the report:
   - Monitoring object;
   - Time range;
   - In the “Message type” field select “Data messages”;
   - In the “Parameters” field specify “Raw data”;

Pic. 10
Settings in the “Protocol” tab
6. Press “Execute” button (Pic. 11).
7. Make sure that data are available in the monitoring software (Pic. 12). Data about attaching iButton keys are displayed in the fields:
   - ibutton_code;
   - avl_driver;
   - trailer_id;
   - ibuttons

Values in the ibutton_code and avl_driver fields correspond to iButton value.
Value in the trailer_id field corresponds to iButton2 value.
Value in the ibuttons field shows the decimal number corresponding to a bit mask of attached keys.
Driver identification by means of iButton keys

Let's consider work with iButton IK on the example of driver identification mode and data displaying in the monitoring software.

To check the identification, it is necessary to perform the following steps:

1. Connect an iButton keys reader to the tracking device (Pic. 4);
2. Simulate the driver identification mode by touching the key to the reader;
3. Go to the “Messages” tab in the monitoring software and specify the object and parameters to generate the report:
   - Monitoring object;
   - Time range;
   - In the “Message type” field select “Data messages”;
   - In the “Parameters” field specify “Raw data”;
4. Press “Execute” button (Pic. 11);
5. Make sure that data are available in the monitoring software (Pic. 12). Data about attaching iButton keys are displayed in the fields:
   - ibutton_code;
   - avl_driver;
   - trailer_id;
   - ibuttons
6. Create a sensor to display the status of identification of the driver, to do this perform the following steps:
   a) select the type of display «Monitoring» in the “Map” tab (Pic. 13);
   b) select the necessary object, press “Open additional menu” button and select “Open properties dialog” (Pic. 14);
c) go to the “Sensors” tab in the opened window “Unit properties” and press “New” button (Pic. 15);

d) enter the sensor’s name, in the “Sensor type” field choose “Driver binding”, in the “Parameter” field choose “avl_driver” or “ibutton_code” (Pic. 16), press “OK” button;

e) go to the “Messages” tab and specify the object and parameters to create the report:

- Monitoring object;
- Time range;
- In the “Messages type” field select “Data messages”;
- In the “Parameters” field specify “Sensors values”;

Press “Execute” button (Pic. 17);
f) set the display of the sensor with the name «Driver» in the table of values of the sensors (Pic. 18);

![Image of sensor display]

f) set the display of the sensor with the name «Driver» in the table of values of the sensors (Pic. 18);

![Image of sensor display]

At that checking of identification of the driver mode is completed.

g) check the key identifier display in the “Driver” column (Pic. 19);

![Image of key identifier display]

At that checking of identification of the driver mode is completed.
Signaling setting to work with iButton keys

To set the signaling to work with iButton keys it is necessary to connect the tracking device to the Configurator and perform the following steps:

1. If necessary, add the key identifier to the list of trusted keys (this procedure is described in the section “Readers connection and signal processing” on pages 5-6 of this manual);

2. Define the event that occurs when the IK with a trusted ID is attached. To do this go to the “Settings” tab -> “Signaling settings”, select the necessary value in the “Use iButtons” field, for example, “enables signaling while holding trusted key” (Pic. 20);

3. In the fields “Phone 1... Phone 4» you can enter up to 4 mobile phone numbers for notification of alarm;

4. Press “Apply” button.

At that the signaling setting to work with the iButton key is completed.
Configuring the control of executive mechanisms

Tracking device allows you to control the starting/stopping of various executive mechanisms. The tracking device has 4 outputs, for which you can set the reaction to changing of signaling status. To set the outputs of the tracking device for starting/stopping the signaling you must perform the following steps.

1. Configure the starting/stopping of signaling in accordance with the section “Signaling setting to work with iButton keys” of this manual.
2. Configure the “Arming” and “Disarming” parameters of one of the outputs in accordance with your aim by selecting the necessary value of the parameter (Pic. 21):
   - No reaction;
   - Invert output;
   - Feed pulses.
3. Specify additional settings of the output (the pulse length in milliseconds, and the number of pulses), if the response is set to “Feed pulses” value.
4. Press “Apply” button.

Setting of the Galileosky tracking device to work with iButton keys 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.