

# **RS485. Connection and Operation with the Matrix 5 Reader and RFID-cards**

User Manual

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# Necessary Tools, Devices, Materials

To connect the Galileosky 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". You can download it here <https://galileosky.com/podderzhka/programmyi.html>

# General Information

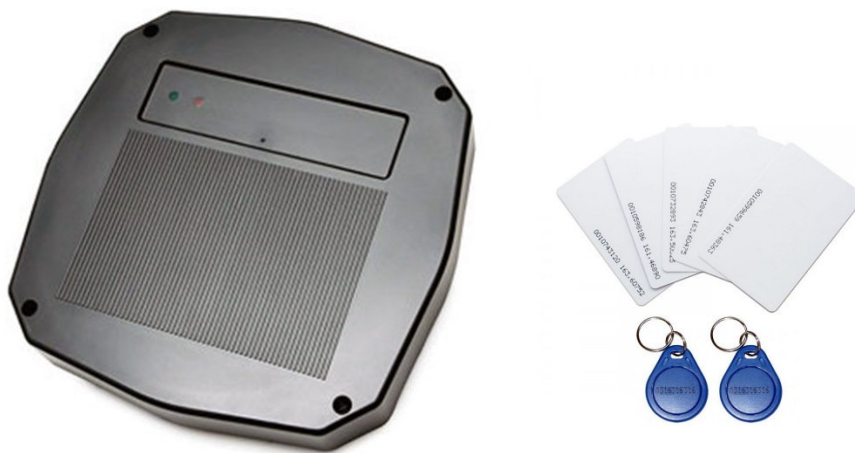
Galileosky tracking devices, equipped with RS485 interface, enable to connect the Matrix 5 reader of RFID cards to the digital input RS485 (Pic.1).

The Matrix 5 reader supports the following identifiers:

- EM-Marine;
- Radio fobs of 433 MHz.

Read range of identifiers:

- EM-Marine – up to 0,5 meter (with the EM-Marine card, IL-05ELR type);
- Radio fobs – not less than 5 meters (with the radio fob, IL-99 type).



Pic. 1  
Matrix 5 reader of RFID cards

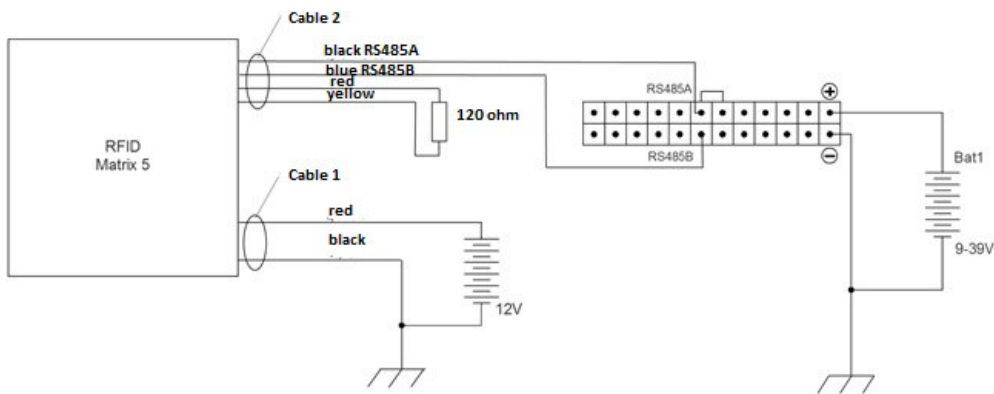
With the help of RFID-cards it is possible to execute the following functionality:

- to set the driver`s or vehicle`s identification;
- to control the signaling activation-deactivation;
- to control the activation-deactivation of different executing mechanisms.

# Readers Connection and Signal Processing

For signal receiving and processing from RFID-cards it is necessary to connect the Matrix 5 RFID reader to the tracking device:

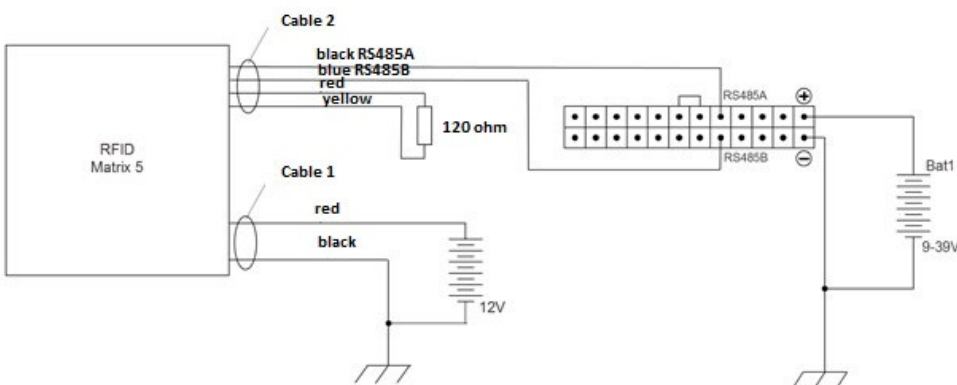
- connection to the Galileosky v5.0 and 7.0 tracking device is carried out in accordance with the scheme of Picture 2.



Pic. 2

Connection scheme of the Matrix 5 reader for the v5.0 and 7.0 tracking device

- connection to the Galileosky v4.0 tracking device is carried out in accordance with the scheme of Picture 3.

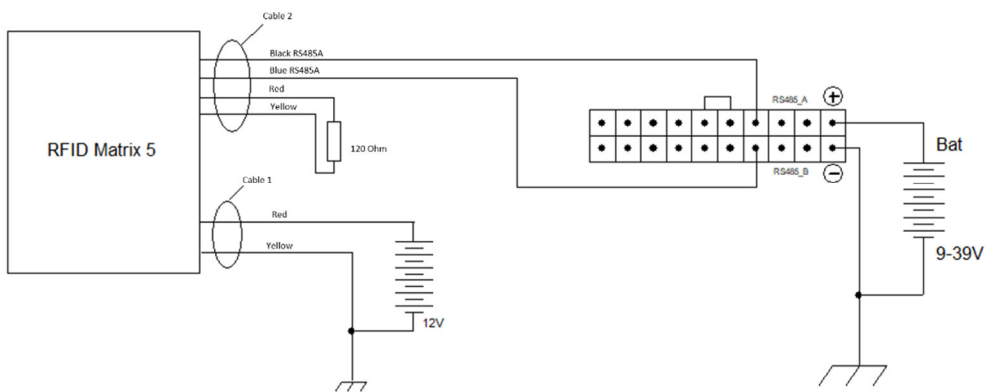


Pic. 3

Connection scheme of the Matrix 5 reader for the v4.0 tracking device

- connection to the Galileosky Base Block tracking device is carried out in accordance with the scheme of Picture 4.

## RS485. Connection and Operation with the Matrix 5 Reader and RFID-cards



Pic. 4

Connection scheme of the Matrix 5 reader for the Galileosky Base Block tracking devices

The tracking device processes a signal from a reader in accordance with the internal algorithm – as a result of RFID cards attaching, key (card) number is entered into the memory, point is recorded, and four lower bytes are further sent to the server without considering the checksum. After detaching the key (card) number is set to zero, point recording and message sending to the server.

For signaling controlling trusted keys can be used. They are entered into the tracking device`s memory or microSD-card. Without using the microSD-card it is possible to save up to 8 trusted keys. Using microSD-card it is possible to specify up to 1000 trusted keys in the tracking device.

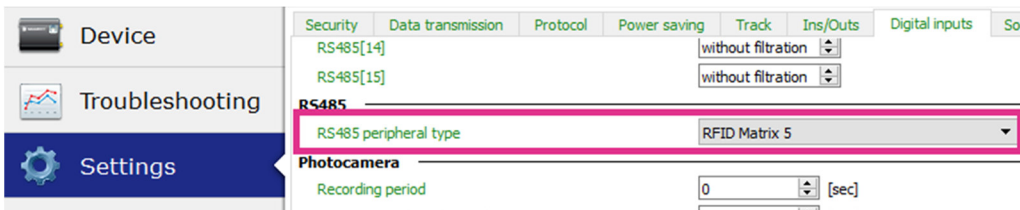
Such operations as entering a key into the list of trusted keys without the microSD card and with the microSD card in the tracking device, setting the driver`s or vehicle`s identification, controlling activation-deactivation status of the signaling function, activation-deactivation controlling of different executing mechanisms are carried out in the same way as it is described in the «Connection and operation with iButton keys and RFID-cards» user manual.

The main difference of the operation with the Matrix 5 reader is that numbers of attached cards are recorded in the iButton2 field.

## Tracking device setting to operate with the Matrix 5 reader and RFID cards

For tracking device setting to operate with the Matrix 5 reader of RFID cards one should take the following actions:

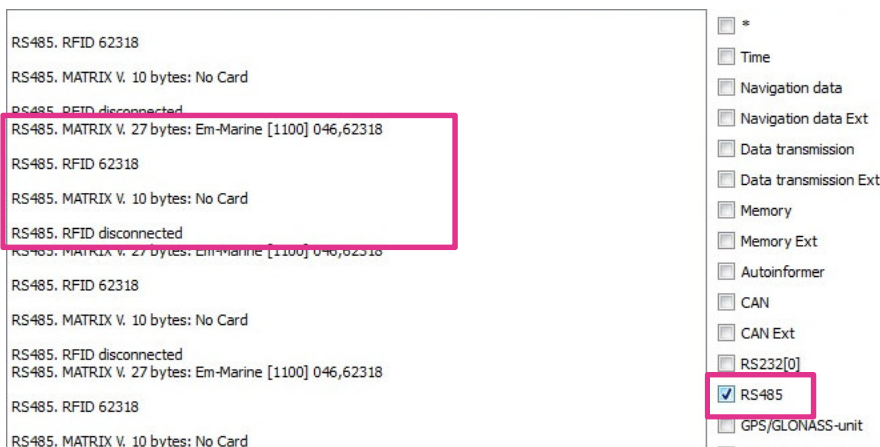
1. launch «Configurator» and go to «Settings» tab -> «Digital inputs»;
2. choose «Matrix 5» in the «RS485 function» (Pic.5);



Pic. 5

Setting of digital input RS485 to operate with the Matrix 5 reader

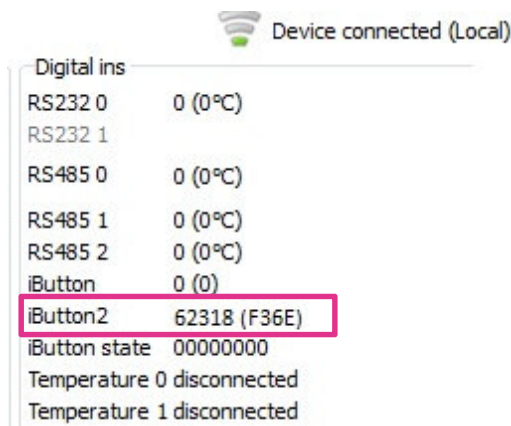
3. click «Apply» button;
4. go to «Device» tab and reset the tracking device with the help of «Reset device» button;
5. after the tracking device resetting go to «Troubleshooting» tab and tick «RS485» in parameters section;
6. attach a key (card) to the Matrix 5 reader, there should be data about the attached card in the troubleshooting window (Pic. 6).



Pic. 6

«Troubleshooting» tab view by attaching of RFID cards to the Matrix 5 reader

7. Make sure that by attaching of a RFID card to the reader there is a card number displayed in iButton2 field on «Device» tab (Pic.7).



Pic. 7

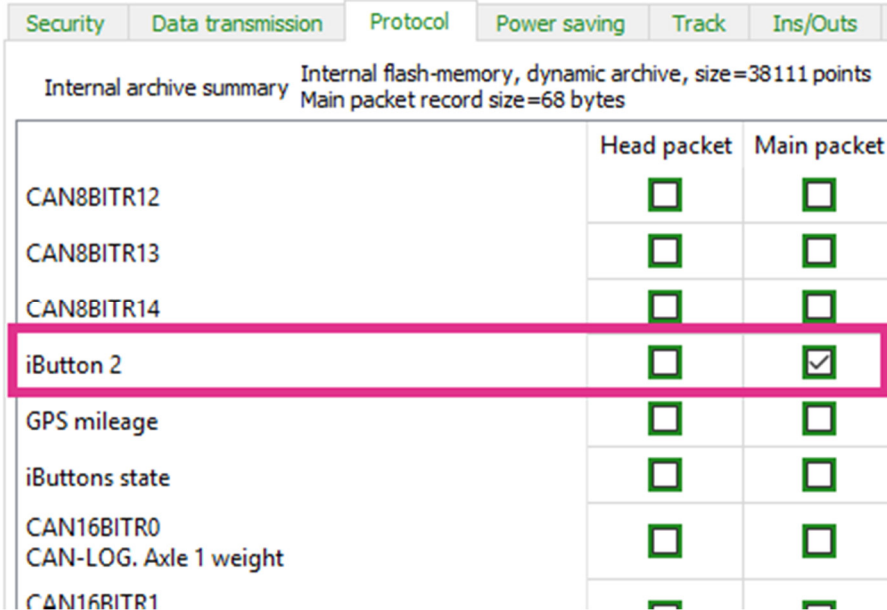
Displaying of the card identifier on «Device» tab

## Data transmission to the monitoring software

Let`s consider data transmission about RFID cards by the example of data displaying in the «Wialon Hosting» software (hereinafter – monitoring software).

For the transmission of data concerning the operation with the Matrix 5 reader to the monitoring server one should take the following actions:

1. go to «Settings» tab -> «Protocol» in the Configurator.
2. tick the «iButton2» field in settings of the main packet (Pic. 8).



Internal archive summary Internal flash-memory, dynamic archive, size=38111 points  
Main packet record size=68 bytes

	Head packet	Main packet
CAN8BITR12	<input type="checkbox"/>	<input type="checkbox"/>
CAN8BITR13	<input type="checkbox"/>	<input type="checkbox"/>
CAN8BITR14	<input type="checkbox"/>	<input type="checkbox"/>
<b>iButton 2</b>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
GPS mileage	<input type="checkbox"/>	<input type="checkbox"/>
iButtons state	<input type="checkbox"/>	<input type="checkbox"/>
CAN16BITR0	<input type="checkbox"/>	<input type="checkbox"/>
CAN-LOG. Axle 1 weight	<input type="checkbox"/>	<input type="checkbox"/>
CAN16BITR1	<input type="checkbox"/>	<input type="checkbox"/>

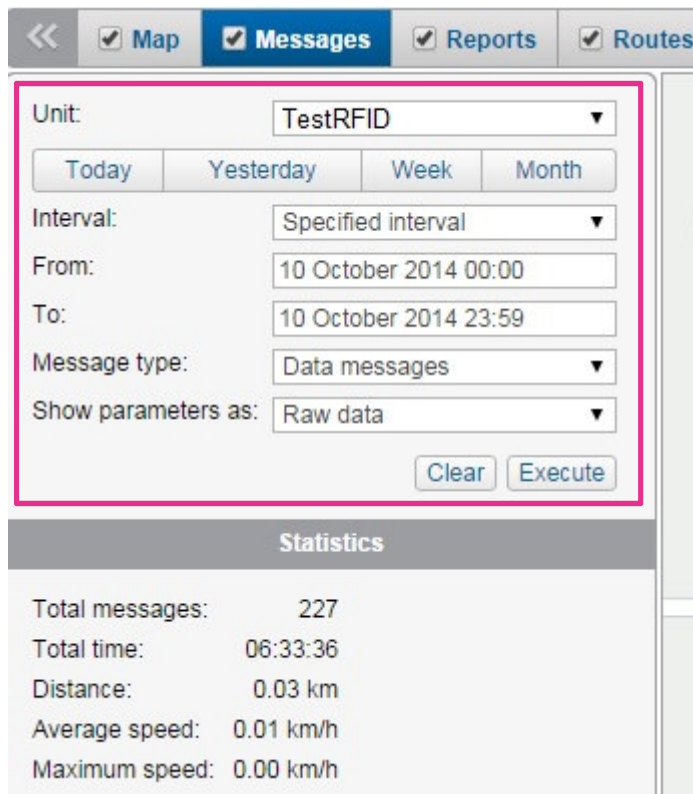
Pic. 8

Settings on «Protocol»  
tab

3. press «Apply» button.
4. attach a card to the reader.
5. go to «Messages» tab in the monitoring software and specify unit and parameters for the report making:
  - unit;
  - interval;
  - choose «Message type» as «Data messages»;
  - specify «Raw data» in «Show parameters as» field;



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Pic. 9

«Messages» tab of the monitoring software

6. press «Execute» button (Pic. 9).
7. make sure that data are available in the monitoring software (Pic. 10). Data about cards, attached to the Matrix 5 reader, are displayed in the following fields:
  - trailer\_id\_code;
  - trailer\_id

```
adc12=0, adc3=0, adc13=0, adc4=0, adc14=0, adc9=0, trailer_id_code=62318, trailer_id=62318, valid=0, soft=226, I/O=0/2a010000  
adc12=0, adc3=0, adc13=0, adc4=0, adc14=0, adc9=0, trailer_id_code=62318, trailer_id=62318, valid=0, soft=226, I/O=0/2a010000  
adc12=0, adc3=0, adc13=0, adc4=0, adc14=0, adc9=0, trailer_id_code=62318, trailer_id=62318, valid=0, soft=226, I/O=0/2a010000  
adc12=0, adc3=0, adc13=0, adc4=0, adc14=0, adc9=0, trailer_id_code=62318, trailer_id=62318, valid=0, soft=226, I/O=0/2a010000  
adc12=0, adc3=0, adc13=0, adc4=0, adc14=0, adc9=0, trailer_id_code=62318, trailer_id=62318, valid=0, soft=226, I/O=0/2a010000  
adc12=0, adc3=0, adc13=0, adc4=0, adc14=0, adc9=0, trailer_id_code=62318, trailer_id=62318, valid=0, soft=226, I/O=0/2a010000  
adc12=0, adc3=0, adc13=0, adc4=0, adc14=0, adc9=0, trailer_id_code=62318, trailer_id=62318, valid=0, soft=226, I/O=0/2a010000  
adc12=0, adc3=0, adc13=0, adc4=0, adc14=0, adc9=0, trailer_id_code=62318, trailer_id=62318, valid=0, soft=226, I/O=0/2a010000
```

Pic. 10

Data about RFID cards in the monitoring software

Thus, the Matrix 5 reader and RFID cards can be further used for the drivers` identification, activation-deactivation controlling of different executing mechanisms, controlling of signaling activation-deactivation.

**Setting of the Galileosky tracking device to operate with the Matrix 5 reader of RFID cards is finished, 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

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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.