RS485. Information Boards
ITLINE and ISCRA

User Manual

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Necessary tools, devices and materials

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

1. Power supply equipment: 10-30V, not less than 1A.
2. Electrical tools.
3. Set of connecting wires.
5. Installation kit of information boards ITLINE or ISCRA (hereinafter – information board)
General Information

Galileosky Base Block and 7.0 tracking devices have a function that enables to work with LED information boards manufactured by ITLINE (it-line.info) and ISCRA (ИСКРАуфа.рф) (Pic. 1) in cooperation with the built-in function of Autoinformer in Galileosky tracking devices.

During the movement of public transport on route, apart from audial provision of information to passengers by means of the function “Autoinformer”, the function of visual information provision is available through sending to LED digital boards text information about the route number, terminal stops, the title of the closest stop.

Algorithms can also provide demonstration of advertisements on the information board. At the approach to a public transport stop the advertisement will be replaced by information about the name of a stop, after that next advertising text will be shown. The advertisement text is demonstrated for 15 seconds.

A fast route change is provided without reprogramming the tracking device.

This functionality is available on Base Block or 7.0 tracking devices, that are equipped with SD-card. Minimal firmware version of tracking devices should be – 18.4 for working with ITLINE and 15.0 to work with ISCRA.
Connection of Information Board to Galileosky Tracking Device

LED information boards ITLINE and ISCRA (hereinafter – information board) are installed to the tracking device in accordance with the scheme presented in Picture 2.

ATTENTION! Algorithms enable to use analog-discrete input IN0 for successive route changes. Before installing the information board to the tracking unit and setting the algorithm make sure the IN0 input is not used by another device or sensor.
Setting ITLINE Board

Galileosky tracking unit can work with 4 types of information boards depending on the location of its setting.

- Front. 0x01 address;
- Side. 0x02 address;
- Rear. 0x03 address;
- Vehicle interior. 0x04 address.

Addresses are set on a mounting plate of every board by means of jumpers depending on its location (Pic. 3):

Front and side boards show the same information:

- Route number in the left part of a board;
- The first station title in the upper line;
- The last station title in the lower line.

Rear board demonstrates only the route number.

The interior board shows current date and time on the first line and on the second – advertising and the stations titles.
Setting ISCRA Board

Galileosky tracking device cooperates with three types of boards depending on their location:

- front/side, address: 0x80;
- rear, address: 0x20;
- interior, address: 0x00.

**ATTENTION!** Addresses of ISCRA information boards are set by the manufacturer and do not require extra settings.

Front and side boards show the same information:

- Route number in the left part of a board;
- The first station title in the upper line;
- The last station title in the lower line.

Rear board demonstrates only the route number.

The interior board shows advertising and the stations titles.
Setting Tracking Device for Operation with Information Boards

1. Connect Galileosky tracking unit to a computer and launch the Configurator software.

2. Go to the tab “Settings” -> “Digital inputs” and for RS485 interface select as a peripheral type “Algorithms RS485 handlers only” (Pic. 4).

3. Go to the tab “Commands” and send command «script galileosky/DigitalDisplayAutoinformer» for downloading the algorithm to work with ISCRA information board (Pic. 5) or command “script galileosky/DigitalDisplayAutoinformerITL” to work with ITLINE information board.

**ATTENTION!** The algorithm is downloaded from Galileosky site, so active GPRS connection is needed.
4. In a few minutes you can check whether the algorithm has been successfully downloaded or not in the Device tab, parameter “Easy Logic” (Pic. 6).

5. Go to tab “Settings” -> “Sound” and activate “Autoinformer” function and presence of the route for “Autoinformer” (Pic. 7).

6. Go to tab “Routes” of Configurator service program and complete the settings in accordance with the user manual “Implementation of the function Autoinformer” which can be found in our site https://galileosky.com/podderzhka/dokumentacziya.html.
7. In case of necessity you can create advertising messages in the field «Advertisement». These advertising messages are stored in SD-card in a separate file advertisement.txt of the route home directory.

ATTENTION! While demonstrating the advertisement, the tracking device shows title of next bus stations between the advertising messages. Consider this circumstance and create the file with bus stations in the correct order (relevant for ITLINE board).

8. The tracking device defines date and time according to Greenwich, for showing these parameters correctly, you need to run command SETTIMEZONE n (where n is a time zone from -12 to 12), for example, for Moscow time zone command “SETTIMEZONE 3” is needed. This information is stored in the SD-card root in file “time_zone” (Pic. 10). After running the command time will be displayed according to the time zone.

ATTENTION! This setting is not applicable for ISCRA information boards.

9. Fast route change can be performed by pushing the button, connected to Galileosky tracking device (button on the input “IN0” Pic. 2). After pushing the button, in 5-10 seconds information about the selected route will be displayed and as the voiced informatory of the selected route number the file route.wav will be performed from the corresponding catalog (Pic. 9). Number of the current route is recorded in the file route_name in the microSD root. Catalogs with routes are stored on microSD-card of the tracking device and selected consequently and cyclically when pushing the button (Pic. 10).
10. If using ITLINE information board, the dispatcher can find out the route number or to change it remotely by means of command Autoinformer. This command can be sent via SMS, monitoring software or service of remote configuration.

Autoinformer OnOff,Repeat,Out,FileName,Gain where FileName is a new route name (for example, Autoinformer 1,0,0,54Т,100)

11. If using ISCRA information board, the dispatcher can change routes remotely by running command Switchroute (this command serves as the button, e.g. each time the command is sent, the route is switched to the next according to the list).

12. Besides, it is possible to change the route number remotely by means of file route_name synchronization using technology WEBDAV. You can use the user manual from our site “Service. Remote synchronization of files in Galileosky tracking device SD-card” https://galileosky.com/podderzhka/dokumentacziya.html
1. It is possible to set picture brightness by means of command SETBRIGHT br0, br1 (where br0 is brightness value of front, side and rear boards; and br1 is brightness value of interior board) (Pic. 11). For example, to set the maximum brightness of the outside boards and minimum brightness of the interior boards, you need to run command SETBRIGHT 100, 1. The set parameters are saved on the root of microSD-card in folder DigitalDisplayAutoinformer in file bright (Pic. 16).

Entering values:
- $br < 0$ - board brightness is equal to 0, that's why nothing is displayed on the board;
- $br = 0$ - board brightness is controlled automatically by built-in sensors;
- $0 < br <= 100$ - board brightness is set to the specified parameter;
- $br > 100$ - board brightness is equal to 100, maximum.

2. You can set the colour of information display on the exterior boards by means of command SETCOLOUR clr0, clr1, clr2, clr3, clr4, clr5, clr6 (where clr0 is the colour of the left part of the front board; clr1 is the colour of the upper part of the front board; clr2 is the colour of the lower part of the board; clr3 is the colour of the left side board; clr4 is the colour of the upper part of the side board; clr5 is the colour of the lower part of the side board; and clr6 is the colour of the back board) (Pic. 12). For example, to set white colour for the first three parts, blue for the next three, red for the last one (back board), you need to run command SETCOLOUR 7, 7, 7, 4, 4, 4, 1. This information is saved on the root of microSD-card in folder DigitalDisplayAutoinformer in file colour (Pic. 16).
Entering values:

- \( cl = 0 \) - the colour of board part is black; thus, nothing is displayed on the board;
- \( clr = 1 \) - the colour is red;
- \( clr = 2 \) - the colour is green;
- \( clr = 3 \) - the colour is yellow;
- \( clr = 4 \) - the colour is blue;
- \( clr = 5 \) - the colour is violet;
- \( clr = 6 \) - the colour is light blue;
- \( clr = 7 \) - the colour is white;
- \( clr = 8 \) or \( clr = 9 \) - these colours are not supported, that’s why the board colour would be red. To set the red colour it is more preferable to use \( clr = 1 \), rather than these values;
- \( clr < 0 \) or \( clr > 9 \) - these values should not be set, as the colour settings will be mixed.

3. Setting the time period for advertisement is performed by means of command \( \text{SETADVTIME} \) at \( \text{at} \) (where \( \text{at} \) is number of seconds, which is given for advertisement) (Pic. 13). For example, to set the time for advertisement as 40 seconds, you need to run command \( \text{SETADVTIME} \) \( 40 \). This information is saved on the root of microSD-card in folder DigitalDisplayAutoinformer in file advtime (Pic. 16).

Entering the values:

- \( \text{at} < 20 \) - time for advertisement is set to 20, as this is the minimum value for the advertisement on the board;
- \( \text{at} \geq 20 \) - time for advertisement is the specified parameter.

4. The board can display the values of the interior and outside thermosensors, which are connected via 1-Wire interface straight to the tracking device independently from the information board (you can study user manual "1-Wire. Connection and operation of temperature and humidity sensors" in our site).
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https://galileosky.com/podderzhka/dokumentacziya.html). For that you need to set values of thermosensor's identifiers by means of command SETTHERMID tid, tod (where tim (thermometerInsideID) is the identifier of thermosensor, which is inside of the vehicle; and tod (thermometerOutsideID) is the identifier of thermosensor, which is outside of the vehicle) (Pic. 14). For example, to set the identifier value of the inside thermosensor as 154, and the identifier value of outside thermosensor as 87, you need to run command SETTHERMID 154,87. This information is saved on the root of microSD-card in folder DigitalDisplayAutoinformer in file thermometersIDs (Pic. 16).

For correct temperature display on the board it is necessary to know beforehand thermosensor's identifiers, connected to the tracking device.

Algorithm to get these values is the following:

- connect the inside thermosensor and fix the identifier (Pic. 15a);
- after that, connect the outside thermosensor and also fix its identifier (Pic. 15b)

If there is only one identifier, you can run the command specifying values only in the necessary position, you can set 0 to the second position. For example, if there is only outside thermosensor, its value is displayed as the second position, first, write 0, and then identifier value: SETTHERMID 0,87.
Connection of information board 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.