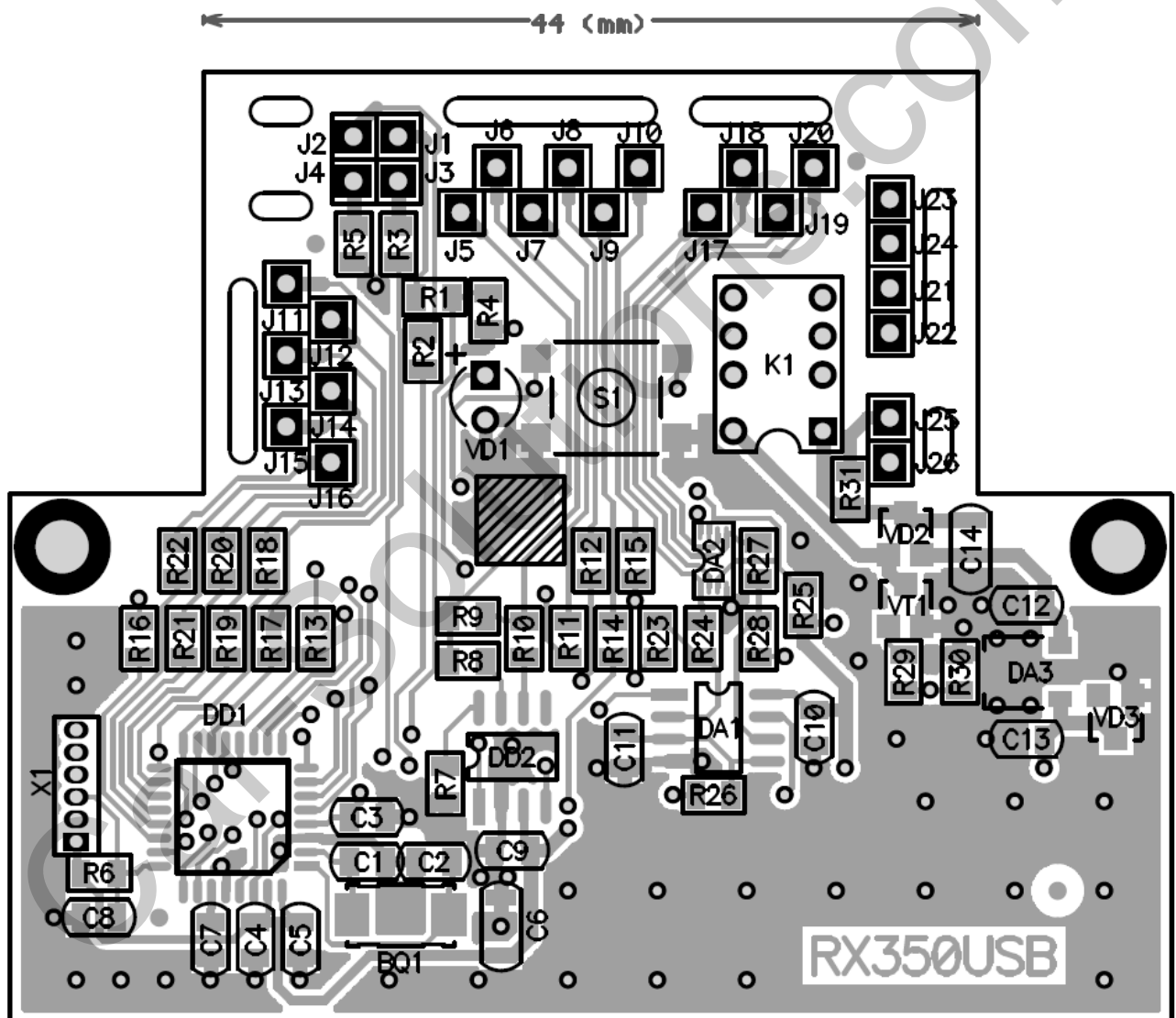


Original RX350 Operation Joystick Controller

User Guide

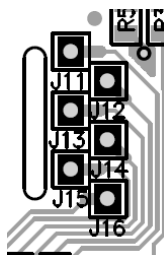
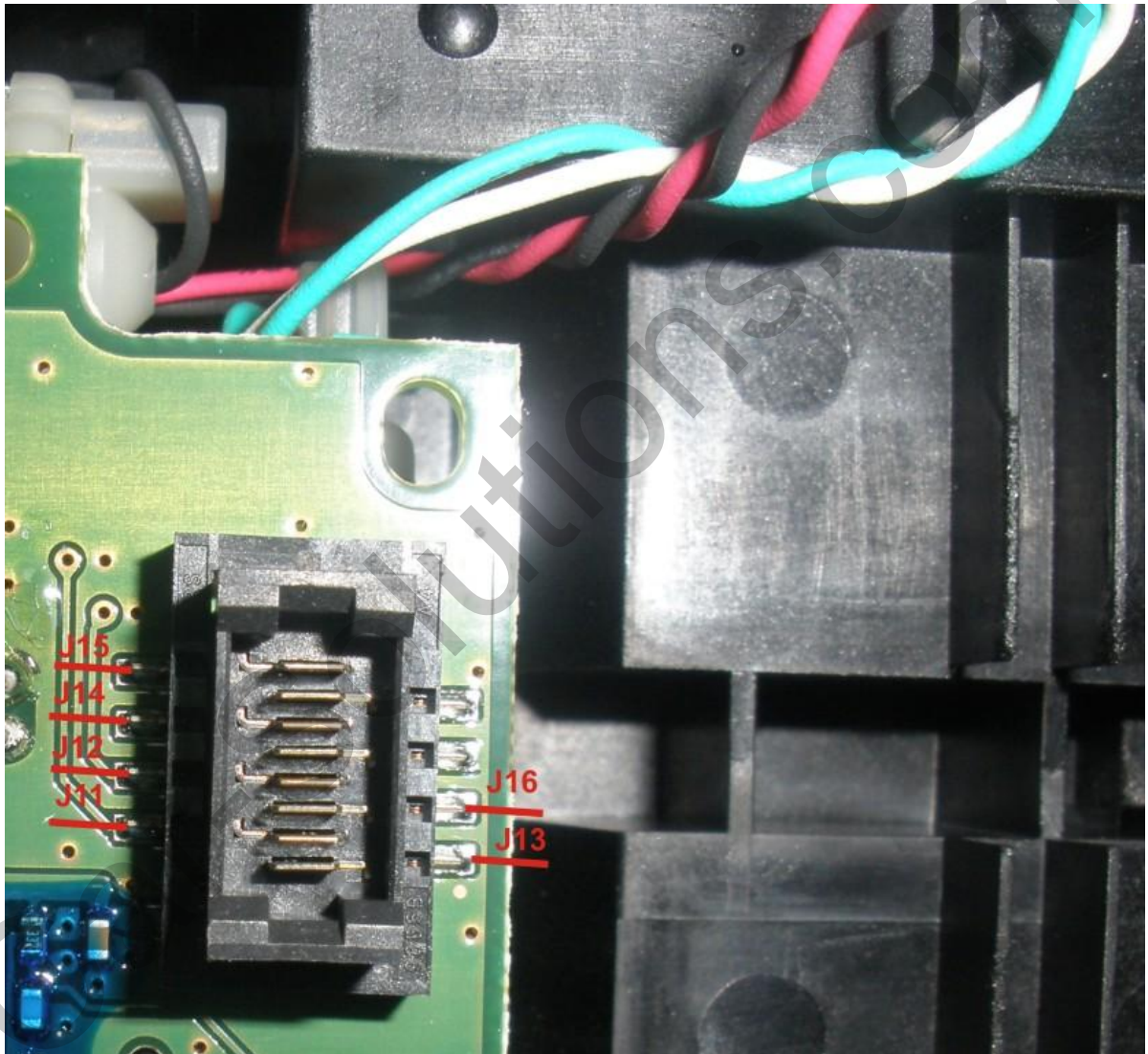


PINS ASSIGNMENT

Location of the controller socket pins is shown on the picture.

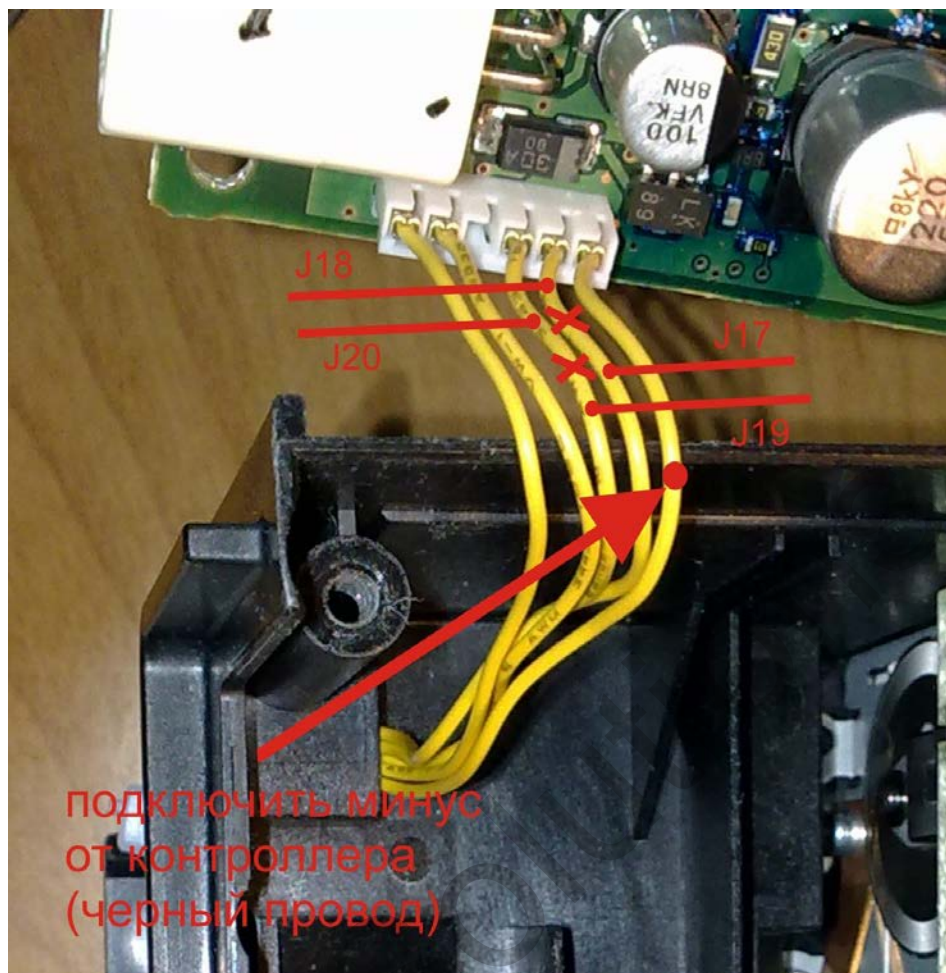
Connection of coder:

1. **Pin J11** to the phase A of quadrature coder through X (AX)
2. **Pin J12** to the phase B of quadrature coder through X (BX)
- Pin J13** to discriminating element of mid-position through X (CX)
3. **Pin J14** to the phase A of quadrature coder through Y (AY)
4. **Pin J15** to the phase B of quadrature coder through Y (BY)
5. **Pin J16** to discriminating element of mid-position through Y (CY)



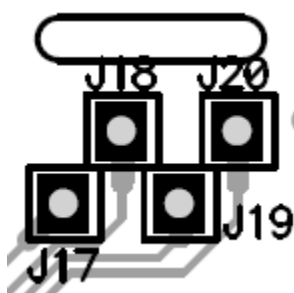
Connection of buttons:

6. **Pin J17** in-between the wire, connected to buttons group MENU, ENTER, DISP – to the buttons
7. **Pin J18** in-between the wire, going from the buttons group MENU, ENTER, DISP – to the board
8. **Pin J19** in-between the wire, connected to buttons group MAP, UP, DN – to the buttons
9. **Pin J20** in open wire, going from the buttons group MAP, UP, DN - to the board



Contact the negative wire from controller (black wire)

Pins location on the board



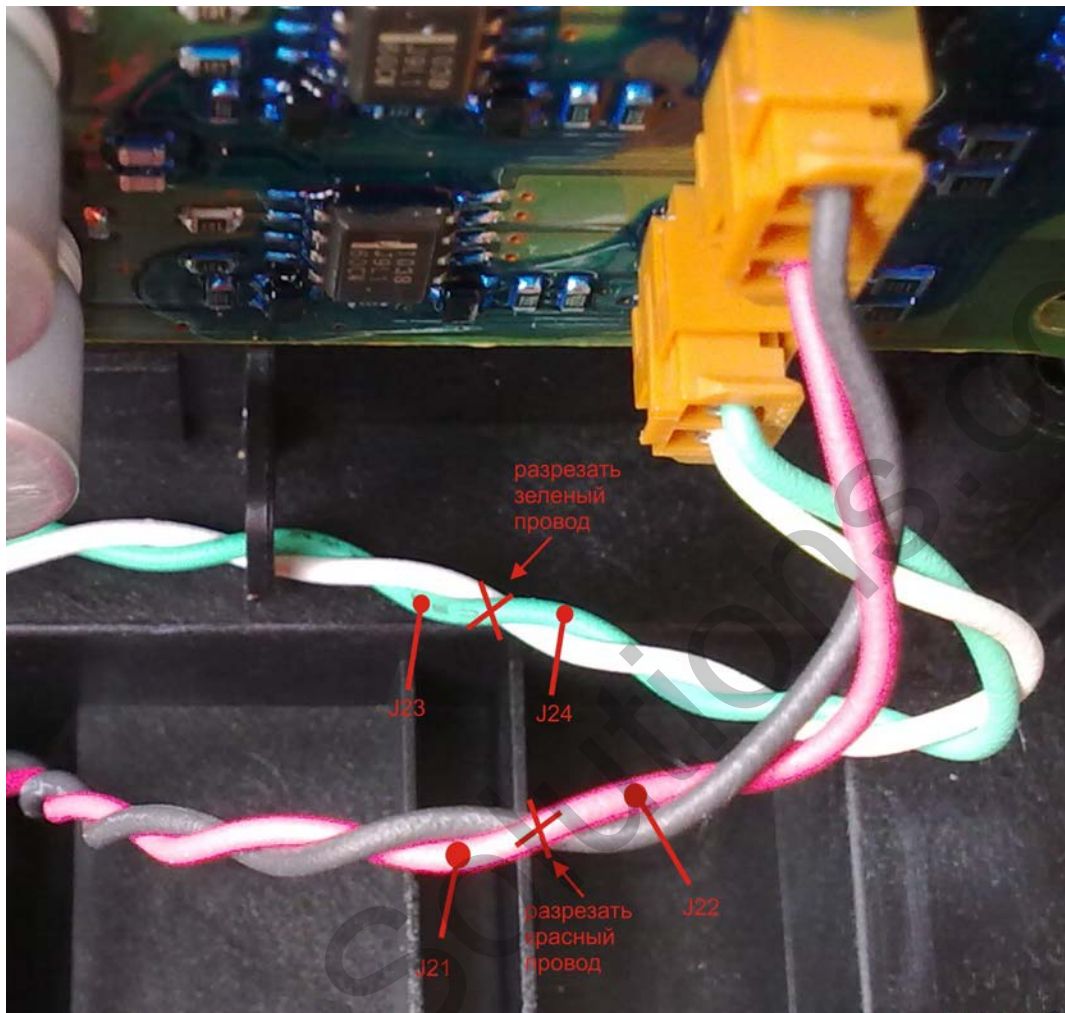
Connection of engines:

10.Pin J21 in-between the wire going to the engine through X – to the engine

11.Pin J22 in-between the wire going from the engine through X – to the board

12.Pin J23 in-between the wire going to the engine through Y – to the engine

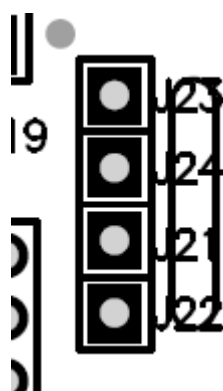
13.Pin J24 in-between the wire from the engine through Y – to the board



*Cut the green wire

**Cut the red wire

Pins location on the board



1. Lay the insulator between the main board and the RX350USB controller board



2.



Pin J25 – connect to ACC

Pin J9 – output of GVIF switcher control. Connect to the black wire of MODE button with 3.3 V (GVIF switcher).

Pin J5 - system bus BS+ (is used for connection to the programming unit or for CIR310U control)

Pin J6 - system bus BS- (is used for connection to the programming unit or for CIR310U control)

Pin J7 – connect TX of the additionally installed navigation device

Pin J8 – connect RX of additionally installed navigation device

USB cable connection:

Pin J1 – VCC (+5V) RED

Pin J2 – D- (DATA) WHITE

Pin J3 – D+ (DATA) GREEN

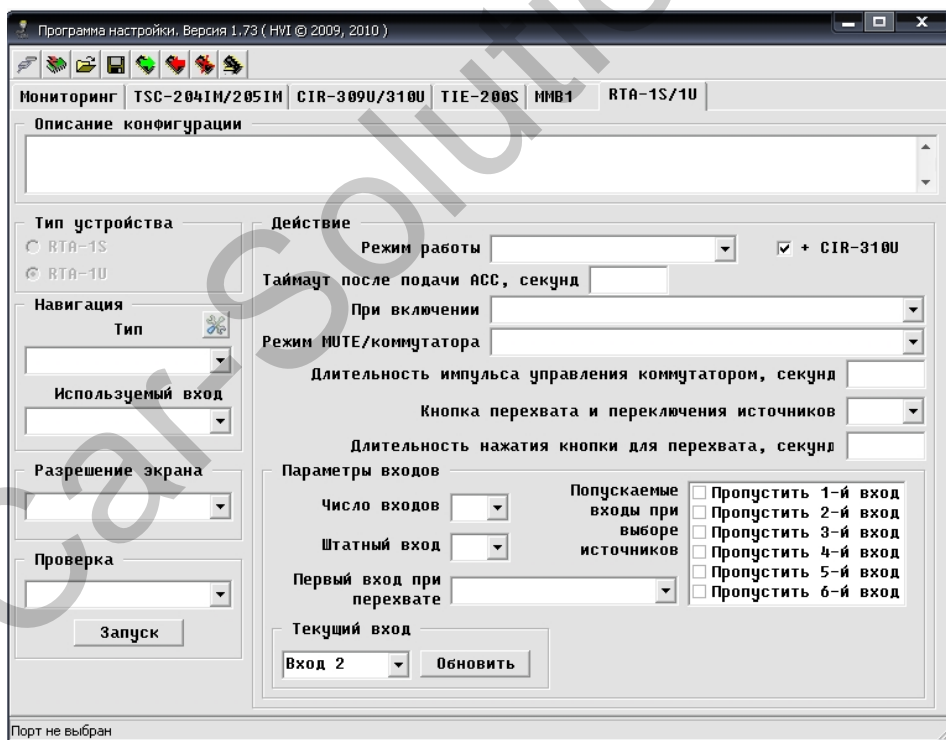
Pin J4 - GND (GROUND) BLACK

Setting of controller configuration:

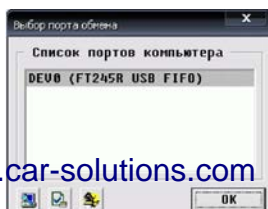
Performed using software Optocontrol.exe (can be downloaded from www.hvi.od.ua). Software shell provides maximum comfort of setting the necessary parameters. But the controller's settings can be made without connecting to a PC using the button and LED on the controller board (not a complete set of configuration parameters):

1. **Entering the programming** - press the RTA-U button before flashing LED, then release it.
2. To set the default state to hold the button down for at least 10 seconds before turning off the LED, then release it.
3. When setting the default state the next operation mode is set: connection to the navigator through the UART, i.e. line RXD / TXD. Determination the type of navigation device is automatically. The screen resolution is not important. Number of input GVIF video signal transcoder of navigator - 2. The first input is gvif stationary input - i.e. this signal should displayed on the screen immediately after power supply (ACC).
1. Once you enter the programming the first programmable parameter will be display resolution of navigator or Car PC (the same happens also when you press the DISP button. The display resolution should be set as close as possible to set the display resolution, otherwise the marker will go beyond the screen or vice versa, will not achieve to the borders of the screen.
 - 1.1 The value of parameters is indicated by the number of LED flashes.
 - To change value of parameter press the UP button on the joystick, to reduce - DN.
 - The number of LED's flashes correspond:
 - 1 - 300x234;
 - 2 - 400x234
 - 3 - 480x234; (This value should be used when connecting navigators Phantom, F1);
 - 4 - 640x480;
 - 5 - 800x480;
 - 6 - 800x600;
2. **To set operation mode of the controller press MENU button, in this case the number of LED's flashes ere as follows:**
 - 1 - mouse emulation for USB;
 - 2 - mode of work with the navigator on the RXD / TXD;
 - 3 - mode only joystick to work with external block through the system interface (joint work with the controller, forming a marker for those navigation devices that do not have it (for example, GVN53));
3. **To set the mode of selection of the type of navigator press MAP button, while the number of LED's flashes correspond**
 - 1 - Automatic choose the type of navigator;
 - 2 - Garmin (GVN53);
 - 3 - LM7200;
 - 4 - Phantom (protocol Kenwood);
 - 5 - Kenwood;

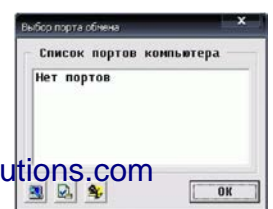
Please note, before installing the controller it is recommended visit our web site and download (and update) the latest version of the software for controller and software shell Optocontrol.exe. Also, on this site there are the most up-dated instructions.



1. Run the application Optocontrol.exe and consider the functionality of buttons at the very top of the screen. From the left to the right





1.1 Selection of port of exchange - the leftmost button. After clicking, a window appears where the state at the moment of loading of shell program Optocontrol.exe is shown. If, at the moment of loading the system interface DTI-201U was not connected, a window will be as shown on the right. To update the current state, press the lower left button. Connecting the system controller and updating the current state, the window will look as shown on the left. If you have connected the system controller to the computer and then run





the program shell, the recognition of the connected port will be automatically. When several system controllers to one PC are connected, you will need to select the desired one from the list. To do this, move on the necessary row by pointer and press "Enter" or click the left button of the mouse.


- 1.2 Update software (SW)** - second button from the left. This is a very important button. It allows you to download the latest version of the controller software. Update file can be downloaded from our website (www.hvi.od.ua). Also, there are the latest version of the operating instructions. By clicking this button, we thus give the command shell program to read information about the current software version and some other data from the controller. To download available files with the extension ldr, for example, masterV0125.ldr. This file is located on


the disc (you need to press a button ) is selected and then pressing the button with a red triangle, it downloads the new software. If the downloadable version of the SW file is identical to the current or earlier, before downloading you will receive a message warning about this.


- 1.3 Button of downloading the configuration file.** This is the third button from the left . With this button you can select the desired configuration. The configuration file includes complete information on the specific installation, namely: the type of vehicle, type of device operated, the number of sources, installation date, etc. This means that for programming the controller when installing on the same car with the same head unit, it suffices to read off a configuration file, and then download it to the controller. Configuration files have the extension ".RTAU", for example, LexusRX350.rtau.

- 1.4 Button of recording the current configuration file on the storage media (HDD, Flash-card).**  This is the fourth button from the left. With this button you can record the current configuration to disk. In the future, this file can be used as a template for other similar installations, or to conveniently make operational changes if necessary. When recording, the file extension is automatically assigned to "rtau".

- 1.5 Button for reading configuration of the device.**  This is the fourth button from the right. With this button you can check the current configuration of the controller. Clicking on it, the user initiates the reading recorded in the controller data. Then, by substituting them in the appropriate places in the graphic menu.

- 1.6 Button of recording configuration in the controller.**  This is the third button from the right. Once all the necessary actions and appointments are made (determined the type of navigator, appointed the inputs and output type, etc.), you must download the current configuration into the controller. If you do not, the controller can not perform its function. All data except the text one are downloaded. Therefore, when reading the configuration back all text data will be lost. To avoid this, you must record all current settings to a file using button of recording file of current configuration (see 1.3).

- 1.7 1.2 Button of configuration reset to its default state.**  This is the second button from the right. If a new version of the software was loaded into the controller (see 1.2), it is necessary to implement reset the controller to its default state. This is required to make mandatory for its correct operation in the future. Also, if you are confused and do not know why the device is not working as it should, you can return to its default state and start setting up from the very beginning.

- 1.8 Button of providing the information.**  This is the first button from the right. Gives information about the program

Default state of the configuration:

By default, ie, As supplied:

- 1. The mode of operation:** "Work with the navigator", ie using the line Txd / Rxd;
- 2. Timeout or time of the initialization of the controller after the "ACC" supply** is 5 seconds;

Mode of the issue of impulse of control by external commutator is selected. Type of output - open collector. To this wire of button switch is connected supplied with GVIF transcoder.

- 3. Type of connected navigator automatically determined;**
- 4. Navigator is connected to input 2 GVIF of transcoder (input RGB);**
- 5. Commutation of sources is done by pressing "MAP" button of joystick;**

Reminder: The second is the output, which appears after the first pressing on the remote control button, i.e. it is located after stationary input.

- 6. There is only 2 inputs, the first is stationary.**

Reminder: The first is that one that appears at the output of GVIF transcoder after power supply;


- 7. The screen resolution is not considered;**
- 8. Signals are commutated by pressing the MAP button on joystick;**
- 9. For Garmin (GVN 53) to select the desired menu item, press Enter, and then holding it go to the item (the item you want will be "highlighted"), then release Enter.**
- 10. When you press the joystick button up-arrow or down-arrow, with the active map the map scale will change.**
- 11. By pressing MENU button will direct you to the menu navigator. The screen resolution is not taken into account;**

If you can not make settings of the configuration of the controller using a computer, you can use the button on the controller board to set the basic functions, see above: Window of the program of control of parameters of the controller RX350USB shown on the left.

1. "Configuration Description" in this window, you can create a description of the current configuration, and describe the entire draft. The volume of input text is not limited. But the input text is not written into the controller. Therefore, the configuration later you need to save to your hard drive or Flash-card.

2. "Navigation".

- 2.1. Type.** In this window you can set the type to use navigation device, selecting from the drop-down list. You can also install automatic

identification of the type of connected navigator, chosen this option, click on Settings button .

- 2.2. "Used input"** As the navigator can connect to any of the inputs of an external commutator, the option of installing the correspondence between the number of input and moment of data transmission to navigator.

Note: The controller can control the commutation of up to six external devices (including the input of regular navigation device). Numbers of inputs correspond to the sequence of appearance of signals at the output of the commutator.

- 2.3. "Mode".** In this menu item the mode if joystick operation is selected, this can be "Regular mode" (set by default) or "Pulled transmission" This setting depends on type of connected navigation device.

- 2.4. "Screen resolution".** Resolution of screen of navigator or PC, which forms the picture is to be selected. By default resolution of 480x234 is selected

Configuration settings with the help of PC (see picture above)

Note: After all necessary parameters are set, do not forget to record the configuration into controller.

3.1. "Operation mode". In dropping out list of menu you can select: Mouse Emulation by USB - selecting this option, the joystick starts to work as a USB-mouse which is connected to the navigator (Phantom, Mircom) or computer. The button «Enter» on joystick corresponds to the left mouse button. **"Work with navigator"** - this menu item indicates that the controller works in mode of transmission of coordinates from the joystick on the bus UART Rx/D Tx/D (GVN53, LM7200). **Together with the RTA-1S** - This mode involves working in conjunction with an optional block that forms the arrow in RGB supplied or in composite video signal of navigator (at the moment the device is in the process of manufacture. And will soon appear on the market) ...

3.2. «Timeout after the ACC.» In this window, the delay of operation commencement of the controller is set. 5 sec is the nominal value. It is necessary in case if the initialization of an external commutator lasts longer than the initialization of the controller what may lead to incorrect reconstruction of the latter state and failure of synchronization between indication additional or standard navigation device and transferring to it the necessary data through the digital bus control.

3.3 "When switching on." In this window you can select the input (any of six), whose signal will be displayed on the driver's monitor always after power supply. Also the opportunity to repeat last state immediately after power supply is given.

Note: The numbering starts with the signal, which is present at the output of the GVIF transcoder immediately after the power supply. This signal is assigned with number 1. Further, the number 2 is assigned to the signal, which will be held at the GVIF output after the first pressing the button of the remote transcoder, for example. And so on till the last undisguised input of GVIF transcoder.

3.4 "Commutator mode". Here you can set the type of signal at the output of operation of an external commutator.

3.4.1 Impulse output liner open collector. In the passive state the output is in high-resistance state. In active state at the output forms impulse of given duration on the ground. This mode is the default mode. It is this signal operates the switching of inputs of GVIF

3.4.2 Impulse output inverted open collector. In the passive state output drawn to the ground. In active state within a specified time output closes itself, i.e. switches itself at a high-resistance state.

3.4.3 Impulse output liner active. In the passive state at the output there is a high level. At the moment of impulse, the signal level drops to zero.

3.4.4 Impulse output inverted active. Similarly to the previous item. Except for the fact that the passive level is zero at the output. During the impulse, the output level becomes high, 5 volts

3.4.5 MUTE delivery - straight active. Delivers a control signal logical 1 (5 volts) before any information from the navigator.

3.4.6 MUTE delivery - inverted active. Delivers a control signal logical 0 (ground) before any information from the navigator.

Note: for cases 3.4.1 and 3.4.2 maximum flowing - in current must not exceed the value of 0.25A. Can be connected to the relay directly to this output on the one hand, and +12 V on the other. All necessary protective circuit are located on the motherboard and do not require additional installation. For all cases, when set an active output, the maximum value of current flowing in and out is 5 mA. Current is internally limited to a serial resistor of 1 kOhm.

3.5 "Duration of impulse of commutator operation" Here time of impulse duration for operation of video signal commutator is set. Range: from 0.2 to 1 sec. nominal 0.3-sec

Setting of inputs parameters:

4.1 "The number of inputs". In this window, you must specify the number of undisguised inputs of GVIF transcoder, in other words, the number of consequently enumerated signal sources.

Button of interception and switching of sources:

In the box you can set the button to choose from (Disp, Map, Menu), through which it will be possible to switch sources.

Duration of pressing button of switching the sources:

The parameter 0 provides switching sources selected button on the circle. Interception of control by joystick is carried out as soon as not standard source is not commutated.

Any other value of parameter, for example 1 sec, regardless of the parameter value, will provide switching of sources by short pressing the button selected. Long pressing (more than the value specified in the window, in our case, 1 sec) leads to a rapid transition to the standard screen and back. If the long pressing recorded at the time of displaying of standard image, switching to be implemented to the source, which is supplied at the input, which number is set in the window "First input in case of interception"

Features of the controller operation with different navigation blocks. GARMIN- GVN53. As the controller, introducing a pointer into the image generated by the navigator, is in production, during the operation there can be some disadvantages.

1.

1.1 With the help of the selected button of sources switching(see above)make the indication of navigator image on display.

1.2 If the buttons Map and Menu are not used to switching the sources, you can use them to go quickly to the map and the menu of navigator.

1.3 To select the desired menu item, press Enter, and then holding the button, intuitive to stick to the item (the item you want to be "highlighted"), then, to execute the command, release Enter button

1.4 **Map scale.** When you pres on the buttons "up-arrow" or "down-arrow", with the active map window, the map scale will change

2. To work with navigator device Phantom it is necessary:

2.1.RTA-1U connect by cable USB to external navigator.

1.1. **Operation mode** – Mouse emulation through USB;

1.2. **Timeout after ACC supply - 10seconds**

1.3. **Mode MUTE/commutator** – Impulse output -_- liner OK;

1.4. **Duration of impulse of commutator operation** - 0.3 seconds;

1.5. **Quantity of inputs** – 2 , if to GVIF transcoder ;

1.6. **number of standard input** - 1;

2. **Operation of additionally installed devices with the help of standard**

2.1. Can be implemented in the case if operated device has an infrared control input and the corresponding IR remote control unit. Operation is carried out by connecting the controller buttons steering CIR-310U to the controller of joystick through the system bus "SB +" "SB-", connecting the appropriate lines between them. Consider the procedure step by step:

2.2. Perform all the necessary connections of joystick controller board.

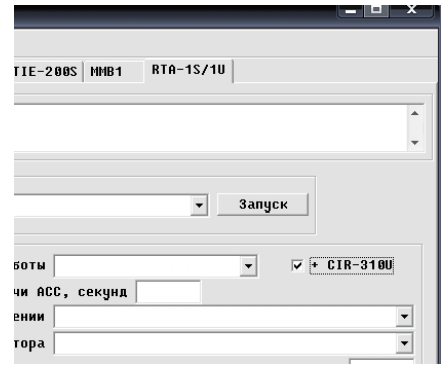
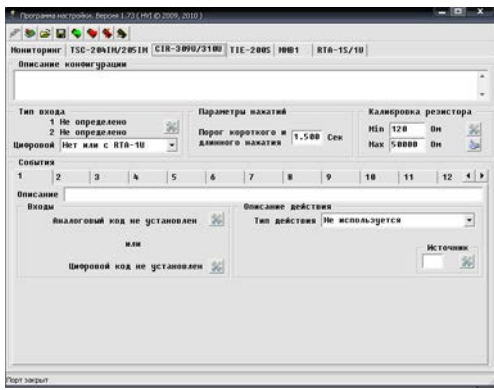
1. Connect the system lines RTA-1U (J5 - BS +, J6 - BS-) and the controller buttons CIR-310U (plug and socket 7 - BS +, 6 - BS-). To adjust the configurations connect DTI-201U system controller to the same lines..

2. Check the quality of connections and supply power.

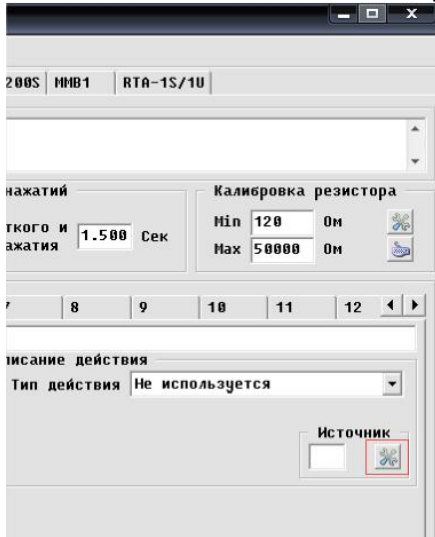
3. Make settings of controller of the joystick.

4. On tab, RTA-1U tick off next to «+ CIR-310U» as shown on the right.

Also, you must configure the controller buttons, steering CIR-310U. Picture on the left. In the window "input type" you need to select option "NO" or "with RTA-1U».



5. Further work with the CIR-310 as written in the instructions for the controller.
6. The only difference is the fact that the code of pressed button is not necessary to determine/
7. Just for each event we associate a combination of joystick buttons and emitted infrared control code.



8. To do this, first press the settings button named "digital code is not installed."

9. Select the button or combination of buttons and position of a joystick knob. Using the remote control, record the appropriate code. As described in the instructions for CIR-310U.

Note: when creating each event for the CIR-310U, you must specify the source number, which must match the number of input of that sources for which the event is created. Number of the current source can be determined on the tab CIR-310U, by pressing the appropriate button (shown marked in red square on the left)

Number of the current source can be quickly set, without using a sequential search of sources. For this on the tab for the RTA-1U there is a window "Current input". Here you can set the input value whose signal must be displayed on the screen. Once selected the desired input from the drop-down list the command is carried out. Moreover, the selected input should not be masked (concealed). Otherwise, you will see a signal on the screen from next from selected input. To determine the number of the current input, press the "Refresh" button, and in the box on the left will appear number of the active input. After implementation of all necessary actions, we record the configuration to your hard disc (for future use) and in the controller. The settings are done.

10. Switch off the system controller.

11. Reset power supply.
12. Devices are ready for operation after completion of set time of initialization (the maximum from two) .
13. Good luck!