

Multifunctional universal wheel-buttons Controller CIR-309U / CIR-310U

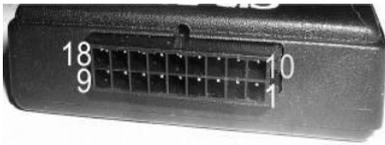


Functionality: CIR-309U is the interface between the resistive matrix of car wheel buttons and commands to be performed by an external device under their control. In addition, the device has a digital input data, due to which commands can be transferred from any other compatible device, for example, the controller CAN bus.

Advantages:

- Suitable for resistive matrix of any type;
- Auto-tuning of the input circuits in accordance with type of resistive matrix;
- Two independent inputs for connecting left and right groups of buttons;
- Input of digital control makes controller usage universal;
- Memory (with remote), with subsequent presentation, up to 32 commands;
- 8 independent outputs, 2 of which provide additional functions;
- Integrated current source provides a connection of diode emitters without need of additional resistors installation;
- Possibility of programming commands of resistive control panels such as joystick for such brands as Sony and Pioneer;
- Convenient parameter setting by computer;
- Programming the carrier frequency for each of the infrared outputs. This provides maximum signal / noise ratio, that ensures maximum quality of multimedia device control;
- Ability to memorize the entire configuration and infrared codes separately, in any medium, for example, in hard disk;
- Absolute inertness to erroneous wiring of the GND or power to any of the inputs;
- Low power consumption;
- Small size 64 x 49 x 18mm. (2.48 x 1.89 x 0.69inches).

Functionality of plug-and-sockets (contacts).



The numbering of the plug-and-socket are as follows: bottom row from right to left 1-9, top row from right to left 10-18.

- 1. Contact 1.** Output should be used to connect the plus (this output is longer than the other) output of the external emitter diode or diodes (up to 6 items, connected in series). "Minus" diode is connected at any of 6 (## 10-16) outputs of the controller. External limiting resistor using is not required.
- 2. Contact 2.** Universal input / output 7. Used in cases where the remote "eye" of radio is active, for example, such as in the Alpine stereo systems. In the case of digital control, contact 2 is the RX input (only in case of simultaneous working with CAN bus decoder (sold separately)).
- 3. Contact 3.** Universal input / output 8. Functionally is similar to the previous. In the case of digital control this socket is TX output.
- 4. Contact 4.** Socket for connection one of groups of buttons (see Appendix).
- 5. Contact 5.** Contact for another groups of buttons connection.
- 6. Contact 6.** Input of the system bus SB - from the universal system controller DTI-201U or the other device produced by us.
- 7. Contact 7.** Input of the system bus SB + from the universal system controller DTI-201U or the other device produced by us.
- 8. Contact 8.** Used only in special cases, which are specifically stipulated.
- 9. Contact 9.** Terminal of system bus. Connected shorted with socket 8 in the cases if the controller is the only device in the chain or the outer in device chain unified by system interface.
Note: Items 6-9 are used only in full operation mode for connection to the system interface DTI-201U.
- 10. Contact 10.** Output 1 is for connection with the minus contact of cathode diode / diodes. It can also be used to control the radio, if it has a standard low-input remote "eye", except for radio recorder Alpine.
- 11. Contacts 11-15.** Outputs from 2 to 6, respectively. Functionally and electrically completely are identical to the previous output.
- 12. Contact 16.** Special input for control radio-tape recorder of brands Pioneer and Sony, if they have a socket for connecting an external controller. Contact # 16 is connected to the inner integral variable resistor. Therefore, each press of wheel button can be associated with the desired resistor, which is close by functionally to one integrated in the factory joystick. Resistor can be set only in full operation. More detailed see Appendix.
- 13. Contact 17.** Input for power source - «ACC» +12 V.
- 14. Contact 18.** Input for "ground" connection.

Note: Wire of the common connection point for all the buttons (or resistors), coming from the wheel must be connected only to the "ground" of the controller as close as possible to its socket. There should not be any other additional points of connection.

Limited functionality mode.

This mode is active by default and is used if the shell is not used for settings the necessary parameters and programming for whatever reason.

GENERAL COMMENTS:



After the voltage supply both LEDs will be synchronously flashing. After 5 seconds only the LED «WORK» remains glowing that shows availability of supply voltage. The LED «PROG» will be off.

- If being in setup mode for 1 minute you do not take any action, the device automatically switches to regular mode.
- By default, the output is configured for use with an infrared diode emitter. Control signal from an external device is supplied at output 1. You can install several (up to 6 items) diodes connected in series (+-+--), to ensure the guaranteed command execution. Carrier frequency is set as 38 kHz.

- Output can be configured for use with the input of a standard remote "eye" (with direct envelope), such as Kenwood. The signal is supplied at the "Output 8".

- If necessary (if in the previous configuration mode "Output 8" device is not managed), you could invert the output signal. The signal is supplied at the "Output 8".

Note: The last two cases can only be used if you install the multimedia device has input for remote control devices in the form of a separate wire or socket connector. For example, Kenwood, Alpine, Clarion, JVC. Such multimedia devices like Pioneer and Sony also contain remote control input. But this input is used to connect a wired remote joystick that our device can successfully simulate (see Appendix). But it can be done only in the mode of full functionality.

If you need to use several infrared control outputs or other frequency carrier, then use the supplied software.

1. Buttons settings mode.

1.1. Push the button for at least 2 seconds till LED «PROG» starts flashing.

Note: if you do not release the button longer till the LED «WORK» starts flashing, the previous configuration will completely erase, and buttons configuration and command programming will be necessary to do from the very beginning.

1.2. The LED«WORK» lights and only after it will dies out the following settings can be done the controller is ready to undertake the following steps.

Note: if you do not press the buttons on the steering wheel for at least 10 seconds (until the flashing of LED «PROG»), the device automatically switches to command program mode.

1.4. Press all the wheel buttons one-by-one, time of each pressing should be at least 1 second.

1.5. Each successful identification of a button indicated by the «WORK» LED's lighting «WORK».

1.6. After successful pressing the last button, wait for 10 seconds. Until the LED «PROG» stops flashing but will remain light.

1.7. This means that the device is switched command program mode.

2. Command program mode

2.1. Setting of the required type of output signal is carried out through a quantity of pressings of the controller button:

2.1.1. Single flashing of LED «WORK» indicates a mode with an infrared emitter. This mode is selected by default. The signal is provided at the "Output 1";

2.1.2. Two flashes with a pause indicate the mode of output operation, which is similar to the operation of the standard remote "eye" (with direct envelope). The signal is provided at the "Output 8";

2.1.3. Three flashes with a pause indicate an inversion mode of output (with direct envelope). The signal is provided at the "Output 8";

Note 1: after entering the command program mode, LED «WORK» indicates the current set type of output by quantity of flashes, repeated after a pause.

Note 2: after every pressing, the LED «WORK» changes the quantity of flashes in accordance with the current type of output signal, until any of the wheel buttons is pressed but not later than in a minute you can change the type of output signal.

2.2. Press a wheel button with the necessary duration.

2.2.1. Duration of pressing less than 1.5 seconds is a short pressing. Duration of pressing more than 1.5 seconds is a long one.

2.2.2. As separate press will be considered simultaneously pressing of two buttons, if they belong to different groups.

2.2.3. As soon as the device indicates pressing the LED «WORK» will light.

2.2.4. For button, for which only one code of radiation in accordance is assigned only one type of depression - any. Any type of depression characterized by the fact that the code is emitted just after pressing and repeated periodically until you release the button.

2.2.5. If the button has two functional purposes (one - for a short pressing, another - for long), the command corresponding to the short pressing is carried out once when the button is released. A command corresponding to the long pressing is carried out after pressing with more than 1.5 seconds duration (also once).

2.3. After pressing the needed button for 30 seconds, it is necessary to point a remote control of external device to a side slot of the controller, placing it on a small convenient distance, and press the remote control button which corresponds to the desired function, pressing not less than 1 second. After successful procedure LED «WORK» dies out. If procedure was unsuccessful, either the allotted time is over the LED «WORK» will start to flash rapidly. In this case, the procedure can be repeated, beginning from paragraph 2.2. If the memory capacity is over (the maximum quantity of recordable commands is 32), an automatic log off from the settings mode takes place.

2.4. Repeat steps 2.2 and 2.3 for the remaining buttons, (the same button can correspond to two different functions, depending on the duration of depression). Also, you can use simultaneously pressing of two buttons, if they are located at different inputs of the device. After programming all the buttons, in 1 minute the device automatically switches to regular mode. Care should be taken that during this time did not happen power interruption of the controller, otherwise the configuration (buttons, types of pressing, and codes corresponding to them) will be lost.

EXAMPLES OF MATRICES RESISTIVE WHEEL BUTTONS CONSTRUCTING AND METHOD OF CONNECTION TO THEM

The figures below show the schemes of remote control (from left to right, Ford, Nissan, Lexus). As can be seen in all three cases, there is a common output, uniting all wheel buttons (for example, the output B for the Lexus). It must always be connected to the GND of the controller. To other output resistors are connected in parallel or in series. There can be two outputs (for example, P and Y for Lexus). They come from each group of buttons located on the right and left hands driver. There may be cases when in the same group of buttons are used both channels of resistive matrixes (as shown on the average figure for the volume control buttons).

These outputs are informational. They must be connected to the inputs # 4 and # 5 of controller. Also, it must always be remembered that the common wire connecting all of the buttons is also informative. And if in the process of setting it has been connected to the GND in one of the points, and after the final installation, this wire is connected to another point of GND, complete breakdown of the device is possible. To avoid such situations, common connecting wire of all the buttons should be connected to the GND of the controller right next to the socket (connector). Between GND socket contact of controller and the point of connection to a powerful car GND must be absent any additional GND connection of any other devices. Despite the fact that we take into account possible negative consequences of the influence of temperature on the quality of the device, still desirable not to place the controller in an area subjected to intense heat, for example, near the distributor of hot air dispenser from the engine for heating the saloon.

