

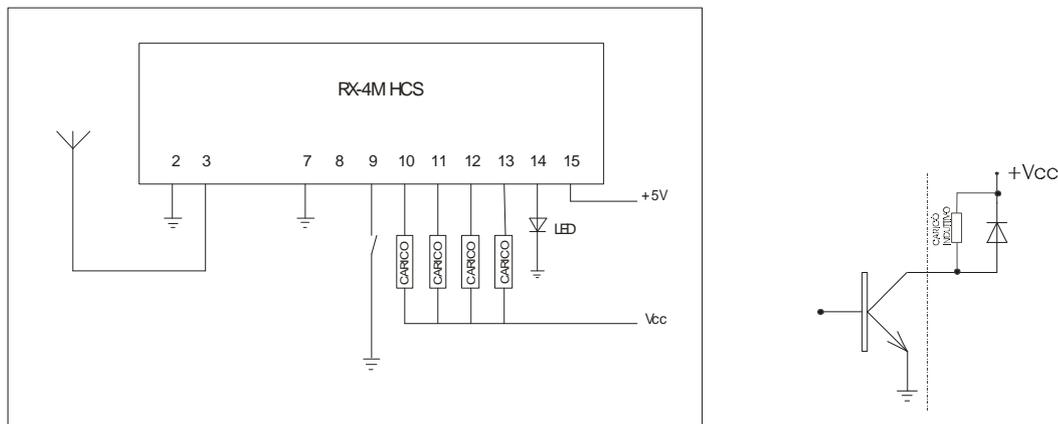
RX 4MHCS/F

433.92MHz OOK(AM) Receiver

Four output channels with free matching switches

Description

Receiver RF with AM modulation, 433.92 MHz working frequency, high sensitivity and selectivity with integrated HCS decoding. HCS is a code variation technology of KEELOQ Microchip. It's a extremely usable version thanks to the possibility to match each button of the transmitter with desired output. This kind of decoding allows to use the TX-12-HCS fully, it gets 12 independent output channels, it means three decodings for 4 channels. Thanks to monostable and bistable mode and the open collector outputs, it's ideal as control element in gate-opener anti-theft and also in some applications where it needs the decoding channel. The code of transmitter is memorized in auto-learning mode(see the features). **Compatible with AUREL keyfobs: HCS-TX-1/2/3 (OVO), TX1/2/3-HCS-433 (HCS), TX-2/4/6 M-HCS, TX-12 CH.**



With this decoding it can use our modules like RX-4MHCS/F and HCS-DEC4 to achieve a 12 channels HCS decoding(using three modules) and one TX-12-CH.

Connection Pin-Out:

- 2) GND
- 3) Antenna
- 7) GND
- 8) Test Point – RX analog output
- 9) Programming push button
- 10) Ch1 output - Open collector (Triggered by pushing button 1 in the keyfob)
- 11) Ch2 output- Open collector (Triggered by pushing button 2 in the keyfob)
- 12) Ch3 output- Open collector (Triggered by pushing button 3 in the keyfob)
- 13) Ch4 output- Open collector (Triggered by pushing button 4 in the keyfob)
- 14) LED output – Connected to anode of LED
- 15) Vcc (+5Volt)

* HCS e KEELOQ are Microchip brands

How it works.

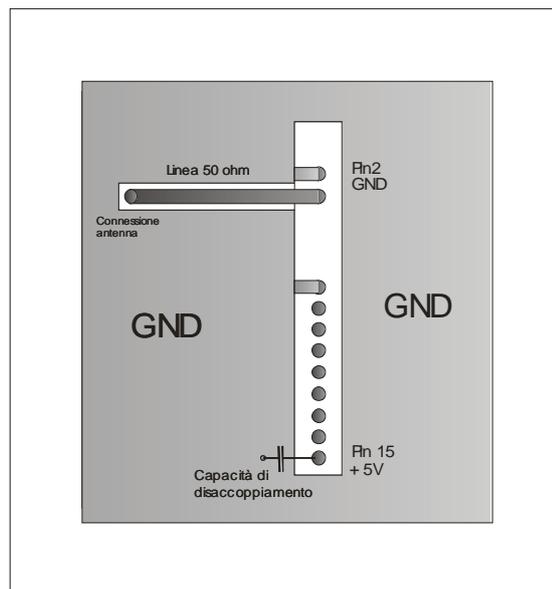
The voltage supply to the module (pin 15) shall be 5Vdc. Pin 9 shall be connected to the push button for programming the receiver, pin 14 shall be connected to the anode of LED to control that programming has

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been carried out (output current is internally limited to around 20 mA by a 180 ohm resistor). External antenna shall be connected, by utilizing for example a piece of wire 17 cm long and a surrounding widespread ground plane (see picture 1). Every output of RX-4MHCS/F is driven by a transistor in open collector configuration, able to bear max current of 100 mA. In stand-by mode transistor is cut off while when triggered is in saturation region. Output can be programmed to work in mono-stable or bi-stable mode, every one independent from the others. In mono-stable mode output is active for all the time the corresponding push button is pressed in the keyfob, releasing the button output switches off. In bi-stable mode output switches its state every time the corresponding push button is pressed in the keyfob (from active to inactive and vice versa). The two operative modes are independent each other, that means it's possible to program some outputs as mono-stable and some others as bi-stable. If an inductive load is connected to the output (i.e. a relay) it's necessary to prevent voltage transients by putting a diode in parallel to the inductive load. LED anode shall be connected towards the output of the module. In order to enable the receiver to activate its outputs it's necessary to store in the RX-4MHCS/F the keyfobs codes. To carry out this operation it's necessary to approach the keyfob to the receiver. By pressing a push button (it doesn't matter which one) of the keyfob during the auto-learning phase, the receiver RX-4MHCS/F recognises the button pressed and all other channels automatically. Only the keyfobs with HCS encoder shall be recognised by the receiver RX-4MHCS/F. Keyfobs not programmed or programmed with manufacturer code different from the one used by AUREL would not be recognised. Based on reasonable demand, Aurel is willing to program the receiver RX-4MHCS/F with specific manufacturer code indicated by the customer.

Ground plane

The circuit must be double layer. Ground plane must surround at the best the welding area of the receiver. For further info please refer to the user manuals of AUREL's receivers.



Picture 1

Programmation

Auto-learning procedure.

Once supplied the decoding, the auto-learning led shall turn on for a little moment (~1sec) to show a correct functioning. By pushing the auto-learning button the led will blink, it switches on one second and it switches off again, this for 12 seconds. During this time, pushing the A switch of X keyfob, it will be assigned on the first output. Pushing twice the auto-learning switch, the auto-learning led will blink two times quickly, then it will switch off for one second, this for 12 seconds. During this time pushing B switch of X keyfob, it will be assigned on the second output. Pushing thrice the auto-learning switch, the auto-learning led will blink three times

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quickly, then it will switch off for one second, this for 12 seconds. During this time, pushing C switch of X keyfob, it will be assigned on the third output. Pushing four times the auto-learning switch, the auto-learning led will blink four times quickly, then it will switch off for one second, this for 12 seconds. During this time, pushing D switch of X keyfob, it will be assigned on the third output.

An another pushing of the switch, the led will blink once again, it will repeat an another program cycle. If any switch of the transmitter will press again, it will escape of the auto learning cycle in 12 seconds. It's possible to learn until a maximum of four switches each single transmitter.

| Num. of Blinking quickly auto learning button | Tx button assigned to: |
|-----------------------------------------------------|------------------------|
| 1 | Output 1 |
| 2 | Output 2 |
| 3 | Output 3 |
| 4 | Output 4 |

Other feature available:

1. In the event in which it is proceeded to assign a button of the same transmitter to the output already programmed, the auto learning led will blink quickly for 10 seconds, this for indicating that the operation is not correct.
2. In the event of it decided to auto learn the second transmitter, the auto learning procedure will be the same above. The decoding system will automatically recognize that a new transmitter isn't to on yet.

How to switch output from mono to bistable

The auto learning button will command the switching between monostable mode and bistable mode. Pushing once the auto learning button, the led will blink for 12 seconds. During this time pushing it again for three seconds or until the led is on, pulling it immediately the led will turn off, after this a blink will show the number one output is bistable. The number one output will switch in monostable mode doing again the same procedure, after releasing the button, a two slowly blink of the auto learning led will show the change. The procedure is the same for the other outputs: for the third output, push the auto-learning switch until to get three consecutive blinkings, push again for three seconds or until the led is switched on, and then release the switch; a slowly blink of the led will show the new correct bistable mode. Any change of the working on the determinate output shall be valid for each switches of each keyfobs matched to that channel.

Erasing memory

In order to delete the memory of RX 4MHCS push the autolearning switch and release it, the led will blink. Now push again the auto-learning switch for eight seconds to see the led switched on and switched off again, showing the auto-learning switch has to be released. The correct deleting is indicated by five blinkings. After the reset any transmitters with HCS decoding will not be recognize, and all the outputs will be set at the monostable mode.