

# 5 channel radio remote control

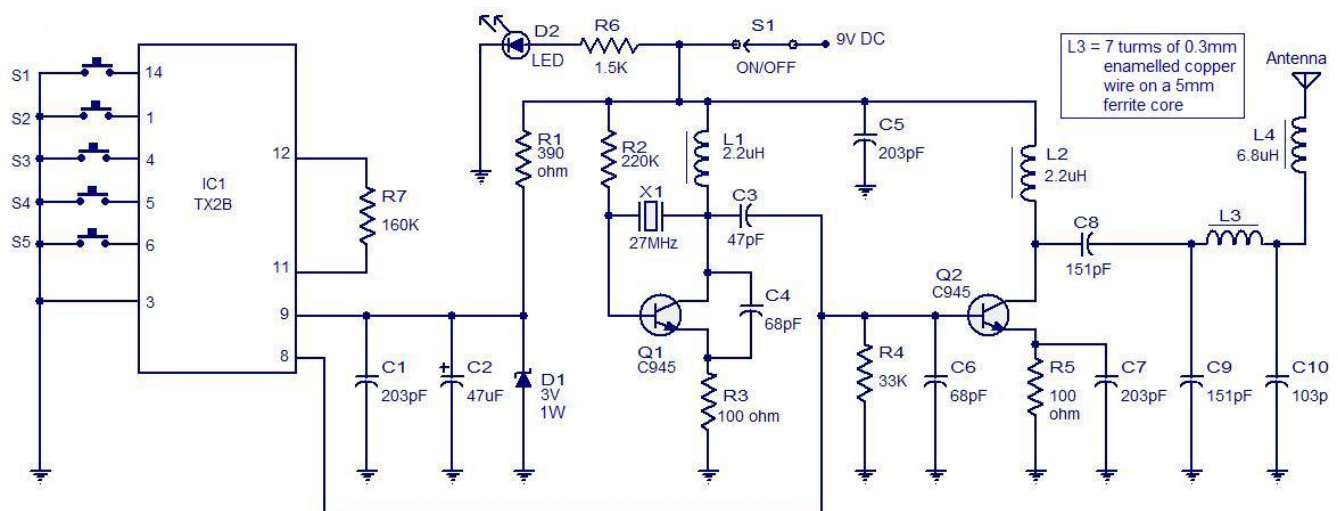
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## TX-2B / RX / 2B 5 channel radio remote control.

This article is about a simple 5 channel radio remote control circuit based on ICs TX-2B and RX-2B from Silan Semiconductors. TX-2B / RX-2B is a remote encoder decoder pair that can be used for remote control applications. TX-2B / RX-2B has five channels, wide operating voltage range (from 1.5V to 5V), low stand by current (around 10uA), low operating current (2mA), auto power off function and requires few external components. The TX-2B / RX-2B was originally designed for remote toy car applications, but they can be used for any kind of remote switching application.

### Circuit diagrams and description.

#### Remote encoder / transmitter circuit.

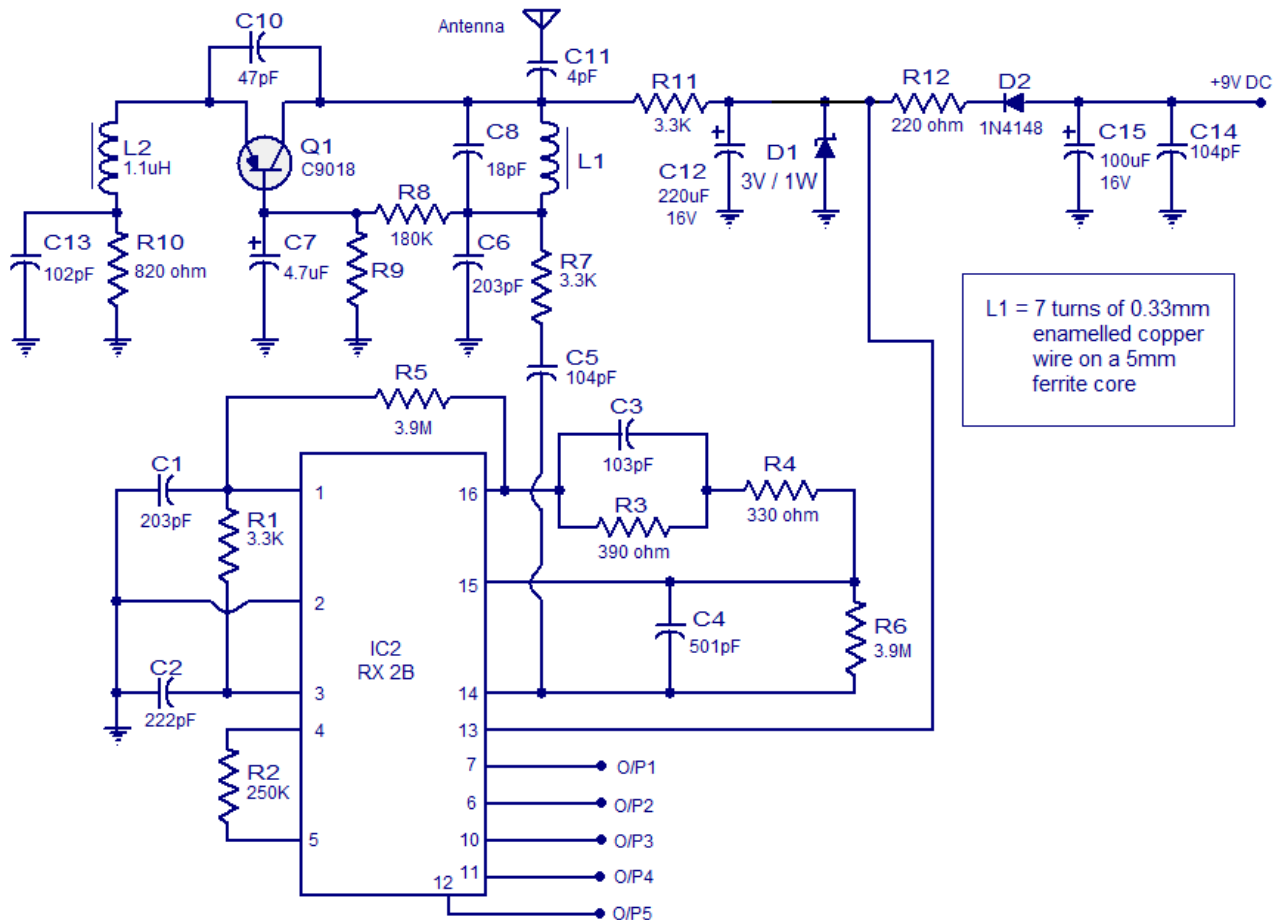


*5 channel radio remote control encoder / transmitter circuit*

The TX-2B forms the main part of the circuit. Push button switches S1 to S5 are used for activating (ON/OFF) the corresponding O/P channels in the receiver / decoder circuit. These push button switches are interfaced to the built-in latch circuitry of the TX-2B. Resistor R7 sets the frequency of the TX-2B's internal oscillator. Resistor R1 and Zener diode D1 forms a simple Zener regulator circuit for providing the IC with 3V from the 9V main supply. C2 is the filter capacitor while C1 is a noise by-pass capacitor. D2 is the power on indicator LED while R6 limits the current through the same LED. S1 is the ON/OFF switch. The encoded control signal will be available at pin 8 of the IC. The encoded signal available at pin 8 is without carrier frequency. This signal is fed to the next stage of the circuit which is a radio transmitter. Crystal X1 sets the oscillator frequency of the transmitter section. R2 is the biasing resistor for Q1 while R3 limits the collector current of Q1. The encoded signal is coupled to the collector of Q1 through C3 for

modulation. Transistor Q2 and associated components provide further amplification to the modulated signal.

### Remote receiver / decoder circuit.



### 5 channel radio remote decoder

The remote receiver circuit is built around the IC RX-2B. The first part of the circuit is a radio receiver built around transistor Q1. The received signal is demodulated and fed to pin 14 of the IC. Pin 14 is the input of the built in inverter inside the IC. R2 sets the frequency of the IC's internal oscillator. O/P 1 to O/5 are the output pins that are activated corresponding to the push buttons S1 to S5. Zener diode D1 and resistor R12 forms an elementary Zener regulator for supplying the RX-2B with 3V from the 9V main supply. C12 is the filter capacitor while R11 is the current limiter for the radio receiver section. Diode D2 protects the circuit from accidental polarity reversals. C15 is another filter capacitor and C14 is a noise by-pass capacitor.

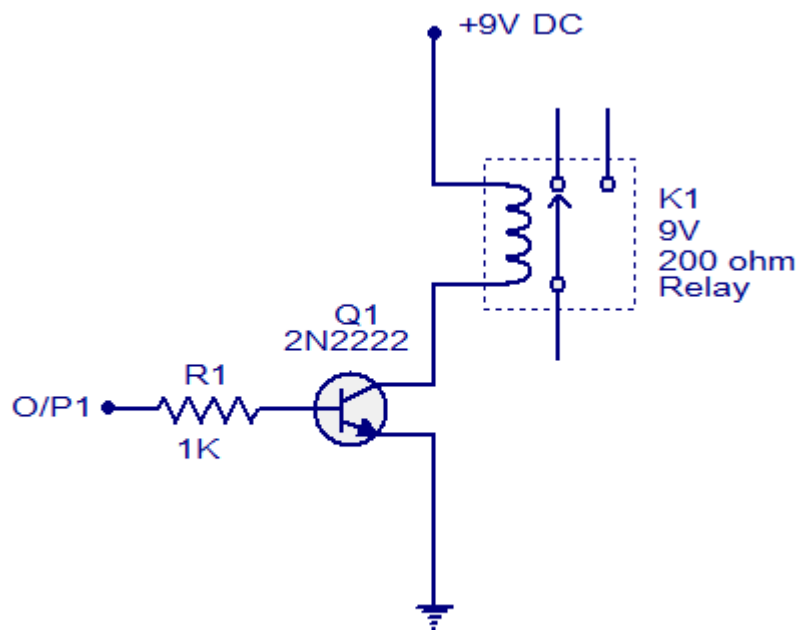
### Notes.

- This circuit can be assembled on a vero board or a PCB.
- Use 9V DC for powering the transmitter / receiver circuits.
- Battery is the better option for powering the transmitter / receiver circuit.

- If you are using a DC power supply circuit, it must be well regulated and free from any sort of noise.
- Both ICs must be mounted on holders.

### Interfacing relay to the RX-2B output.

The method for interfacing a relay to the output of RX-2B is shown below. When push button switch S1 of the transmitter circuit is pressed, pin O/P1 (pin 7 of the RX-2B) goes high. This makes the transistor 2N2222 to conduct and the relay is activated. The same technique can be applied to other output pins of the RX-2B. The relay used here is a 200 ohm type and at 9V supply voltage the load current will be 45mA which is fine for 2N2222 whose maximum possible collector current is 900mA. When using relays of other ratings this point has to be remembered and do not use a relay that consumes a current more than the maximum possible collector current of the driver transistor.



Interfacing relay with the RX-2B output

*Interfacing relay to the remote decoder*