

Experiment 18-

Infrared Remote Control Transmitter

In this experiment you will build an infrared remote control transmitter that activates the remote control receiver of experiment 17, and it will also be used in further experiments. The circuit of this experiment is shown in Figure 1. It uses a 555 IC to generate a series of pulses that are applied to the infrared LED L1. This circuit is similar to the opto transmitter of experiment 6. The only difference is that it does not contain a potentiometer to adjust the frequency of the pulses, and it incorporates pushbutton S1 to turn the transmitter on and off. Refer to experiment 6 for a complete description of the operation of this circuit.

Procedure:

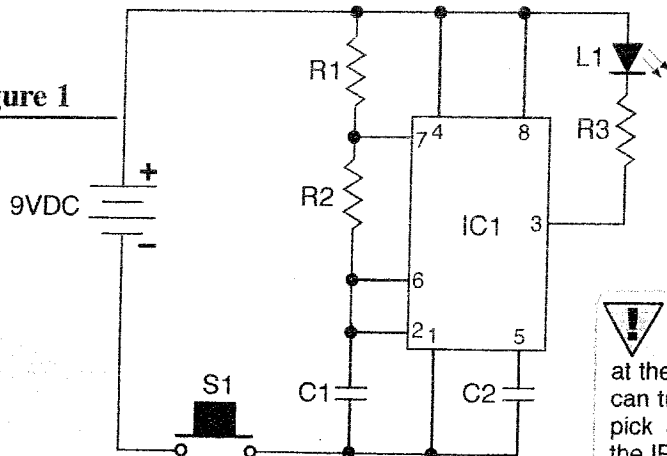
- Build the circuit shown in figures 1 and 2. Be sure to install the IR LED L1 and IC1 in the correct direction. When done, verify that the circuit has been properly assembled, and connect a fresh 9V battery to the snap.

- Take the infrared remote control receiver built in experiment 17 and connect a fresh 9V battery to it.

- Locate the transmitter at least two feet away from the receiver. Press pushbutton S1 and aim the IR LED of the transmitter at the IRM of the receiver (experiment 17). The LED of the receiver should turn on indicating the reception of the infrared signal from the transmitter. Press and release pushbutton S1, and the LED of the receiver should turn on and off. Find out the maximum distance of detection between the transmitter and the receiver.

Note: Do not disassemble the circuit of this experiment after completion, as you will need it in further experiments. You can disassemble the receiver built on experiment 17.

Figure 1



NOTE: Do not take apart circuit after completing this experiment. You may take apart experiment 17 on the small breadboard.

Parts List:

- R1:** 4.7K Ω Resistor (Yellow, Violet, Red)
- R2:** 1K Ω Resistor (Brown, Black, Red)
- R3:** 100 Ω Resistor (Brown, Black, Brown)
- C1:** .1uF Disc Cap (104)
- C2:** .01uF Disc Cap (103)
- IC1:** 555 IC
- L1:** Infrared LED (clear LED)
- S1:** Pushbutton Switch
- Misc.:** Battery snap, breadboard, wires, and assembled experiment 17.

! You need to make sure that the IR LED is pointing directly at the IRM. To accomplish this you can turn the receiver on its side or pick up the transmitter and point the IR LED at the IRM.

IMPORTANT NOTE: Build this project so that the LED extends over the end of the protoboard as shown below.

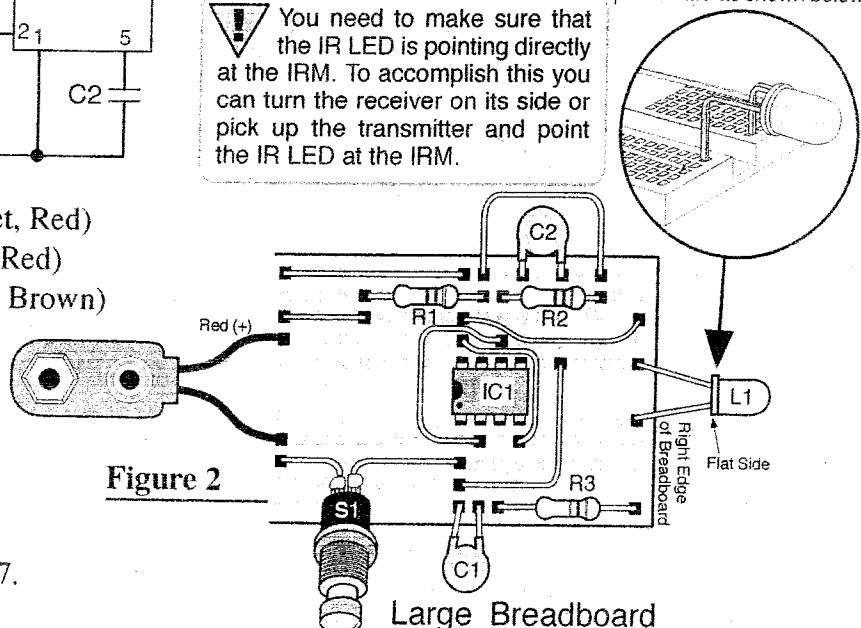


Figure 2