

## Bi-Stable Mode of 555 timer using IR Triggering Monostable 555 Timer Circuit output with DC Motor, LDR Circuit

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### Abstract

In this paper I present a study of bi-stable mode of 555timer using IR triggering Monostable 555timer circuit output with 12v dc motor and a LDR (light dependent resistor) circuit which is a mechanical method. This is an alternative method to bi-stable mode of 555timer Using J-K flip-flop IC.

**Keywords:** IR triggering Monostable 555timer circuit, Bi-stable mode of 555timer, LDR (light-dependent resistor) circuit, 12v dc motor.

### 1. Introduction:

It is known that 555timers are having three operational modes, viz, Astable mode of operation, Monostable mode of operation and Schmitt trigger

### 2. Bi-stable mode of operation.

In Bi-stable mode of 555timer to get continues output, continues input triggering must be given. Or if a Monostable 555timer output is connected to a J-K Flip-flop IC, bi-Stable mode will be resulted. But I analyzed and found an alternative mechanical method to get the same result by using dc motor, LDR circuit in place of J-K flip-flop IC in IR triggering monostable 555timer circuit. In this circuit LDR is used. It is of that type which allows current through it when light doesn't fall on it. The method which I analyzed is shown in Fig. 1.

Figure 1: Monostable IR triggering 555 timer Circuit.

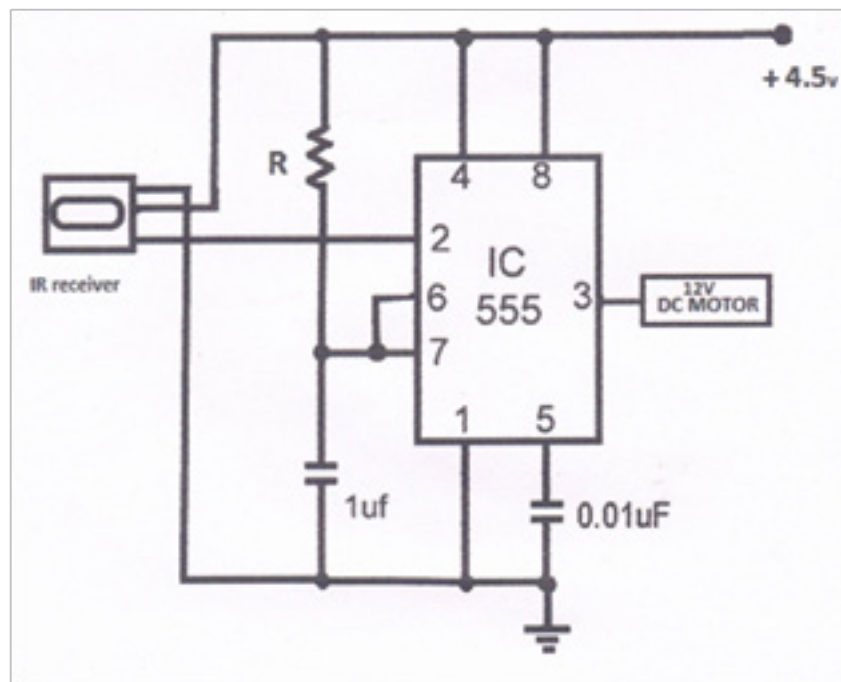


Fig.1 shows monostable circuit of 555timer with IR triggering. The output of the circuit is connected to 12v dc motor. A 0.06M diameter disc having 8wings made with equal distance of 0.01M apart is attached to motor shaft, which is shown in Fig.2 & 3.

Figure 2: 12v DC motor



Figure 4: LDR Circuit

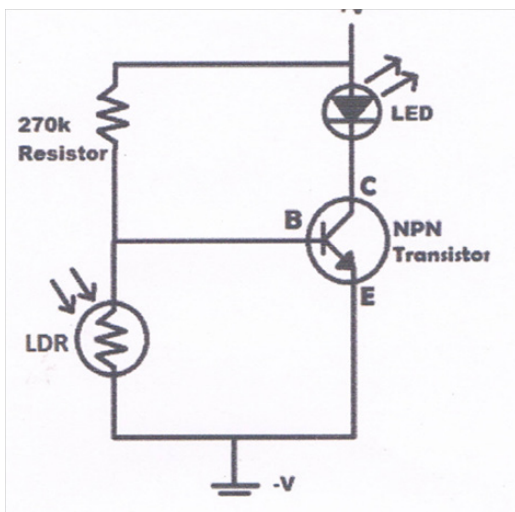


Figure 3: 12v DC motor with DISC

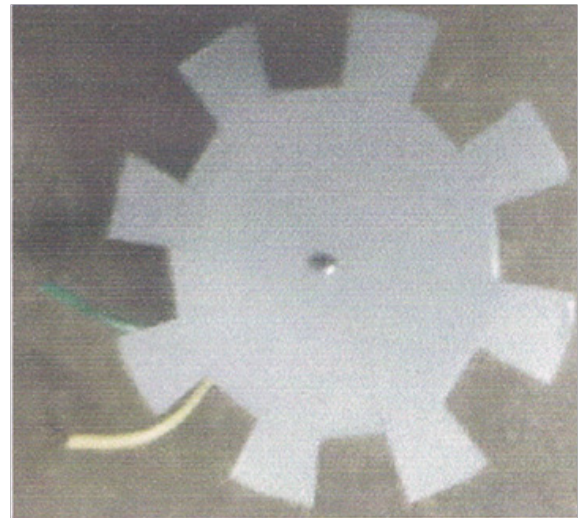
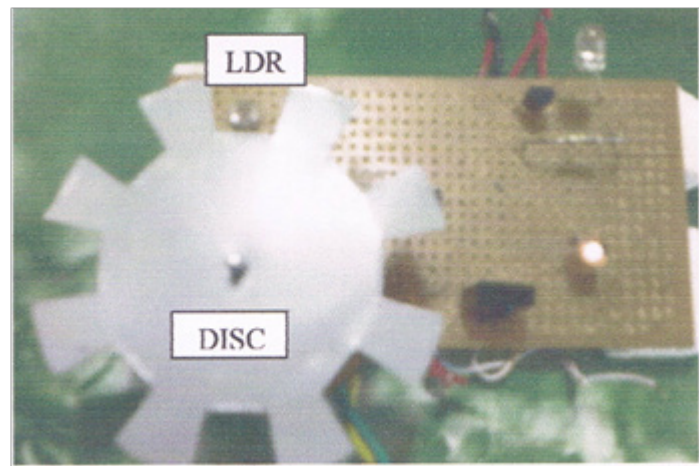


Figure 5: Overall view of circuit



If triggering is given, the disc of dc motor rotates for a time period of  $T = 1.1RC$ . This R,C value is adjusted for one step moment of disc. Here I kept Capacitor value constant as shown in Fig.1. R value must be adjusted to get required time period as per the formula, by using DRB (Decade Resistance Box). Now LDR sensor is arranged below the disc of dc motor. when the triggering is given, the motor rotates for one step then one of the wings stays on LDR sensor and it obstructs falling light on LDR sensor. Then it passes current through it to the load. This load remains until the darkness disappears with next triggering which rotates disc for next step and light falls on LDR sensor through gap next to the wing moved. Due to the light on LDR sensor the current doesn't flow through the load. Hence this circuit, by this method gives ON and OFF mode. The LDR circuit is shown fig:4. The overall view of circuit diagram is shown in Fig.5.

**3. Conclusion:**

It is concluded that the ON-OFF mode is nothing but Bi-stable mode of operation, then bi-stable mode of 555 timer is obtained.

**4. References:**

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- 2• Source: You tube [http://www.youtube.com/watch?v=\\_dcjzJfQZHk&feature=fvwrel](http://www.youtube.com/watch?v=_dcjzJfQZHk&feature=fvwrel)