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FINAL REPORT OF DIPLOMA PROJECT

FACULTY OF ELECTRICAL ENGINEERING

INFA-RED TRANSMITTER AND RECEIVER

SYAHRIN FADZLY ABD AZIZ

ZAKARIA ABD RAHMAN

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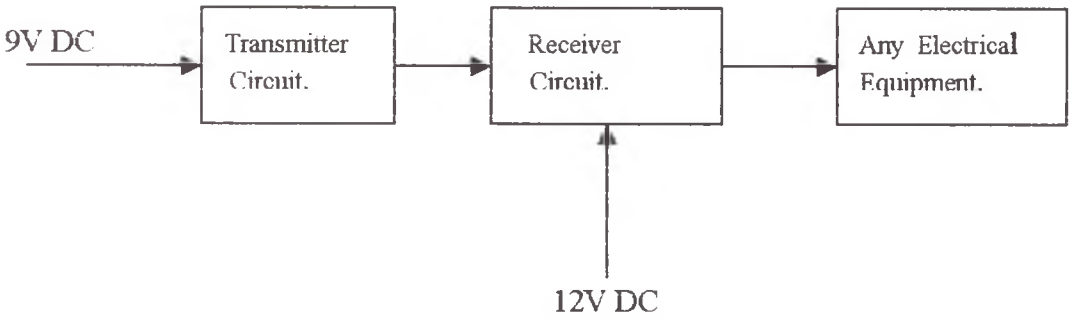
ABSTRACT

Infra-red remote-control is a simple circuit that includes two major circuits a transmitter and a receiver. It is useful in electrical instruments. The transmitter circuit consists of 9V D.C supply voltage, Zener Diode , CMOS 4011 , Variable Resistor (trimmer pontentiometer) and Infra-Red LED. The receiver circuit consists of 12V D.C supply voltage , Infra-Red receiver module, D.C 12V SPDT miniature relay, LM 567 Low Power Tone Decoder, CMOS 4013 Dual D-type flip-flop, SPDT sliding switch (for mode select), and a series 78L05 voltage regulator, This circuit is designed to assist users when they are using electrical instruments. In other word, this Infra-Red transmitter and receiver is like a wireless switch, where the users do not have to move around just to switch on an electrical instrument. The output from receiver can be connected to any electrical instrument such as fan, lamp, radio and etc. In our project we connect the output from the receiver with a lamp socket.



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RESISTOR.

The opposite of current is resistance. Resistance is defined as the ratio of voltage (Volts) across a sample of a material to the current (Amperes) through the material. Resistor is the device that is used in measuring resistance. Resistance is measured in (Ohms) or (Ω).

'R' represents the symbol of resistance. All materials have some resistance to the current that comes through it. However, different types of materials represent different type of resistance. It's hard to obtain free electrons (current carrier) from some materials than others. It requires more energy to free electrons in high resistance materials than low resistance materials. Another form of energy will be converted when current is forced to pass through the materials.

A resistor is used to limit the current, to divide voltage and in certain part it may generate heat when a current passes through it. When the voltage is applied to a pure resistance, the current flows in direct proportional to the voltage irrespectively where it may vary it. There are many different types of resistors that have been manufactured nowadays. The values of resistors that have been manufactured have the average value from 1Ω to millions of Ω.

In an electronic device, the amount of resistance that is used is so small that the resistance used in other part of devices of the conductor can be ignored.

How to measure the resistance of a resistor.

When a current is driven through a resistor (R1 & R2) in series, the resistance (R) can be calculated :

$$R = R1 + R2$$

When the resistor is in parallel, the resistance (R) can be calculated :

$$R = \frac{(R1)(R2)}{R1+R2}$$

From the equation of :

$$V = IR$$

$$R = V/I$$

Where V= the applied voltage in Volts

I = the current in Ampere

R = the resistance in Ohms