A Practical activity Report submitted

for Engineering Design Project-II (UTA-024)

by

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Submitted to

Dr./Mr./Ms. .....

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Experiment: 1

Objective:

- To draw a schematic diagram of receiver to receive specified pulse width IR signals from gantries using CAD tool (Eagle).
- To design a printed circuit board layout of receiver circuit using CAD tool (Eagle).

Software Used: Eagle Software

Component Used:

Sr. No	Name of Components	Value	Specifications	Quantity
1.	Resistor	120k Ω	Carbon Resistor with 5% Tolerance	1x
2.	Resistor	100k Ω	Carbon Resistor with 5% Tolerance	1x
3.	Resistor	22k Ω	Carbon Resistor with 5% Tolerance	1x
4.	Resistor	1k	Carbon Resistor with 5% Tolerance	1x
5.	Shottkey Diode	BPW41N		1x
6.	Male Header	3-pin	PCB Header	1x
7.	Operational Amplifier	LM311N	Microcontroller	1x

Theory:

1. **Resistor**:

Resistors are ubiquitous components in electronic circuits, and receiver circuits are no exception. They play a crucial role in various aspects of receiver operation, including

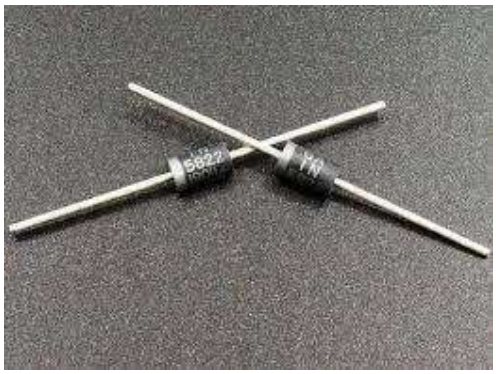
***Biasing, Current Limiting, Signal Attenuation, Current Limiting** etc.*

specific applications of resistors in receiver circuits will vary depending on the type and complexity of the receiver.

Resistors

2. Shottkey Diode: Schottky diodes play a crucial role in various parts of receiver circuits due to their unique characteristics compared to traditional silicon diodes. Here are some key applications are

Reverse Voltage Protection, Leakage Current Control and fast switching.



Shottkey Diode

3. Led3mm: A standard 3mm LED (Light Emitting Diode) wouldn't typically be used directly in the main signal processing stages of a receiver circuit. It primarily functions as an output device, providing visual indication of various aspects of the received signal or circuit operation. Here are some potential uses of a 3mm LED in a receiver circuit are

Error detector, Mode Indicator Signal Strength Indicator

Various types of sub miniature standard led

4. Male Header:

Male headers play a crucial role in various electronic circuits, serving primarily as a connector and providing an easy interface for component attachment or signal transmission. Here are some key uses of male headers in circuits are

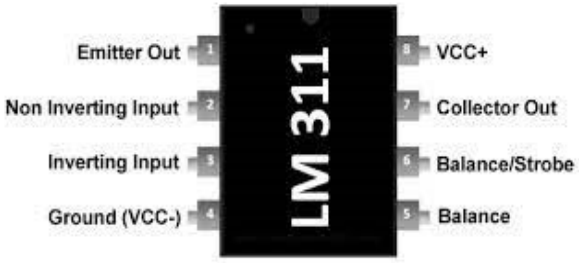
Jumper wire Connections, link two circuit, Connecting Modules and Boards

Male PCB Header

5. Operational Amplifier (LM311N):

The LM311N is a versatile operational amplifier (op-amp) and can be used in various applications within a receiver circuit, depending on the desired functionality. Here are some potential uses

Level Detector and AGC (Automatic Gain Control), Level Detector and AGC (Automatic Gain Control) , Level Detector and AGC (Automatic Gain Control)



LM311N

Schematic diagram:

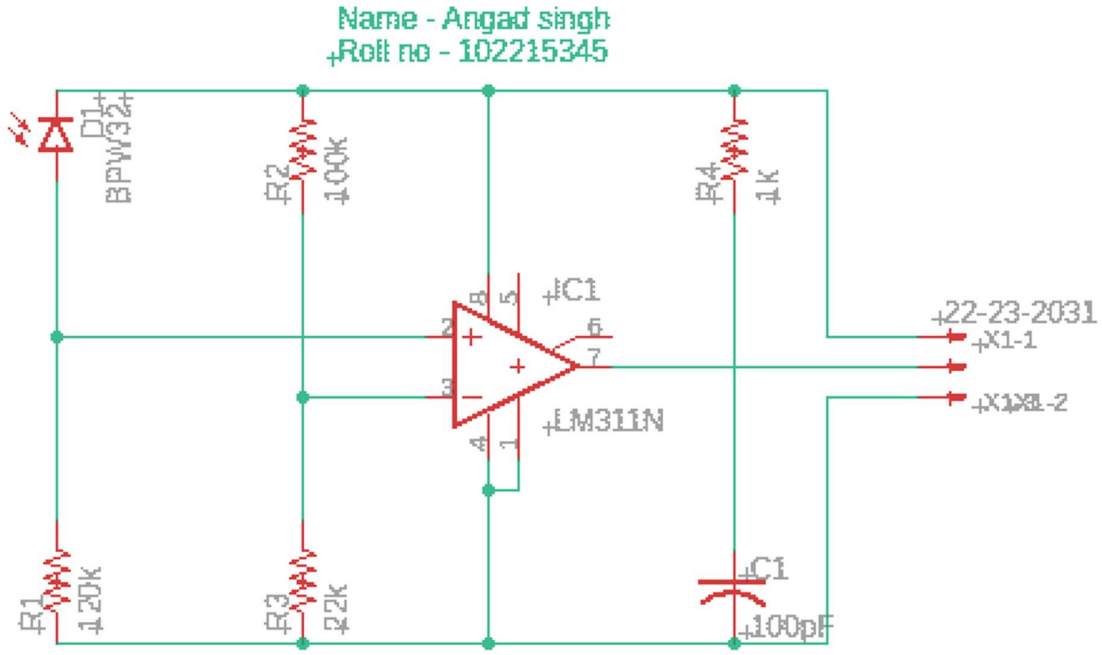
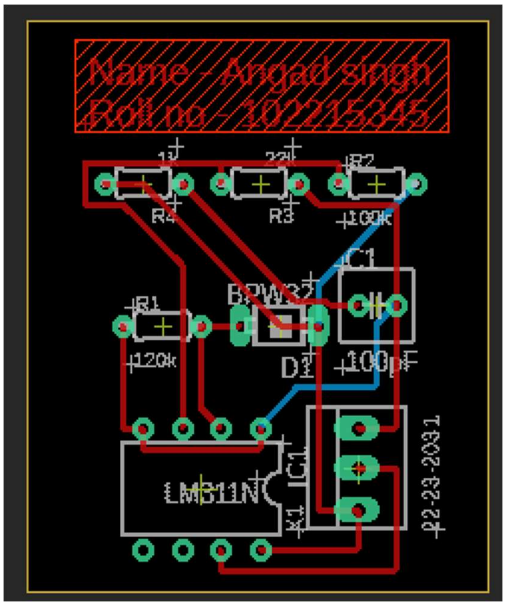
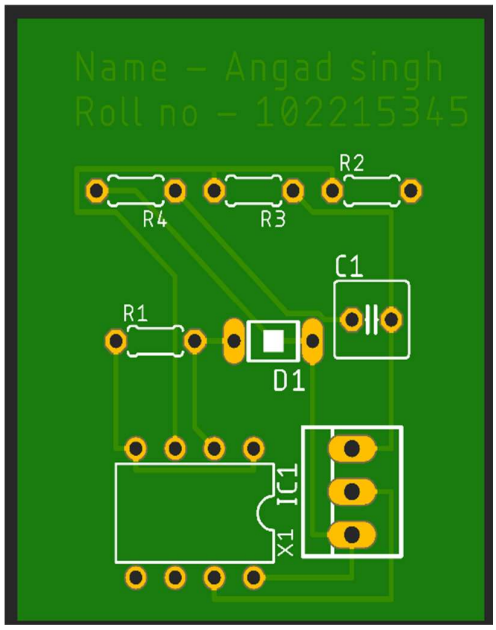


Fig. 1.6 Schematic diagram of Receiver circuit

Printed Circuit Board layout:





Discussion:

In this experiment, we have learnt how to use Eagle software and to draw a schematic diagram of receiver and printed circuit board layout of receiver. we also get to know about various components used in the circuits and their utilization and also learned how to interface them

Also learned about LM311N and its used with in the receiver circuit

Reference:

[1] **https://forum.allaboutcircuits.com/threads/resistors-in-receivers.15002/**

[2] **https://www.electronicsforu.com/electronics-projects/simple-fm-receiver**

[3] **https://www.st.com/resource/en/datasheet/lm211.pdf**

Signature of Faculty member