Metal Detector

Introduction

Metal detector is a very common device that is used for checking persons, luggage or bags in shopping malls, hotels, cinema halls, etc. to ensure that person is not carrying any metals or illegal things like guns, bombs etc. Metal Detectors detect the presence of metals.

There are different types of metal detectors like hand held metal detectors, walk through metal detectors and ground search metal detectors. Metal detectors can be created easily and the circuit for a basic metal detector is not that complex.

In this project, we have designed a simple DIY type Metal Detector Circuit using very simple components that can be used in our homes and gardens.

Block Diagram

Component

- 1 x TDA0161 Proximity Detector IC
- 2 x 47nF Capacitors (Ceramic Capacitor code 473)
- 1 x 1 KΩ Resistor (1/4 Watt)
- 1 x 330 Ω Resistor (1/4 Watt)

- 1 x 100 Ω Resistor (1/4 Watt)
- 1 x 5 KΩ Potentiometer
- 1 x 2N2222A (NPN Transistor)
- 1 x 5V Buzzer
- Coil (copper wire of 26 – 30 AWG is taken and it is wound in to a coil of diamater 5 – 6 cm and 140 – 150 turns)
- Additional Components (for LED)
  - 1 x 220 Ω Resistor (1/4 Watt)
  - 1 x 5mm LED

Application

- This simple Metal Detector can be used to identify metals like iron, gold, silver etc.
- Since it is a simple project, we can use this in our home to scan for nails, metal scraps etc. which are not easily spotable by naked eye.

Advantages

- The Proximity Detector IC TDA0161 based Metal Detector Circuit is a very simple and easy to construct metal detector that can be used to detect small metals in our homes, offices and gardens.
- There is need for any microcontroller as the Proximity Sensor will be sufficient to implement the project.