

## **MEMS Accelerometer sensor controlled robot with wireless video camera mounted on it**

The main aim of this project is video coverage at required places with the help of digital camera and high power LED. Robot is controlled by depending upon the tilt directions and its wireless communication. The video will be transmitted to the receiver using AV transmitter. At receiver end, these can be seen on TV. It is a very low cost survey line system used to monitor a larger area. We are using RF communication to send commands to robot.

RF Communication ranges in between 30 KHz to 300 GHz. RF communication works by creating electromagnetic waves at a source and being able to pick up those electromagnetic waves at a particular destination. These electromagnetic waves travel through the air at near the speed of light. The wavelength of an electromagnetic signal is inversely proportional to the frequency; the higher the frequency, the shorter the wavelength.

MEMS is a Micro Electro Mechanical Sensor which is a highly sensitive sensor and capable of detecting the tilt. The project consists of two micro controller based motherboards. One motherboard consists of a controller interfaced with MEMS Accelerometer sensor technology to control the direction of the robot, a RF transmitter to send commands to robot and it will provide a channel for wireless communication, a LED indicator. This entire board acts as a remote to control the movement of the robot as well as receive the information from the robot. The other board is present with the Robot itself. It is interfaced with some DC motors for moving the robot, a RF receiver for receiving the instructions from the transmitter. The innovative feature in the system is it automatically detects the light intensity and switches ON the light source if intensity of light is low which helps in better vision of surroundings. The Microcontroller is programmed using Embedded C language.

This project finds its major applications while we are monitoring larger areas like political canvassing, cricket stadiums, international conferences, worship places, banking etc. This project assures us with more reliable and highly secured system. The microcontroller will act as the mediator between the input module and output module.

**The objectives of the project include:**

1. Forms the surveillance system for combing areas.
2. Monitors large spaces in industrial environment.
3. Wireless transmission over RF.

**The project focuses on the following advancements:**

1. RF technology.
2. Micro Electro Mechanical accelerometer Sensors.
3. Interfacing MEMS accelerometer to Microcontroller.
4. Motion control of Motor.
5. Embedded C programming.
6. PCB designing.

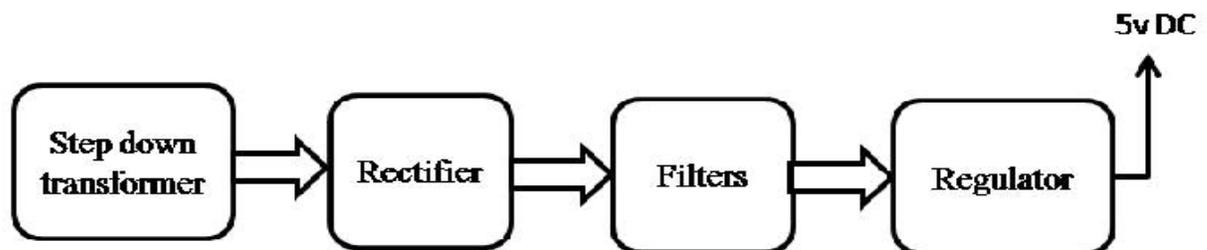
**The major building blocks of this project are:**

1. Regulated Power Supply
2. MEMS ACCELEROMETER SENSOR
3. RF transmitter and Receiver modules.
4. Micro Controller
5. Motor drivers.
6. Crystal oscillator.
7. LDR.
8. High power LED with driver.
9. DC Motor.
10. Reset.
11. Camera.
12. AV transmitter and Receiver.
13. LED indicators.

**Software's used:**

1. PIC-C compiler for Embedded C programming.
2. PIC kit 2 programmer for dumping code into Micro controller.
3. Express SCH for Circuit design.
4. Proteus for hardware simulation.

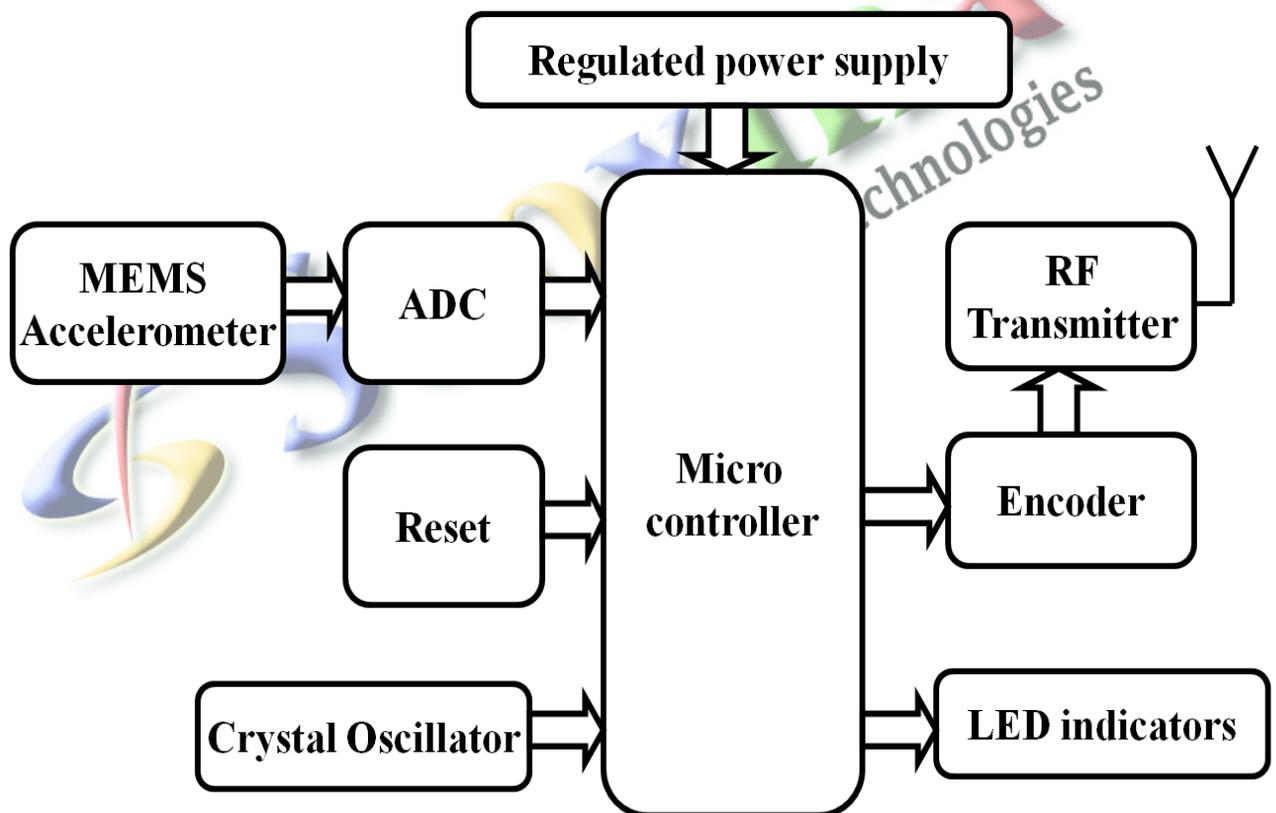
**Regulated Power Supply:**



Block diagram:

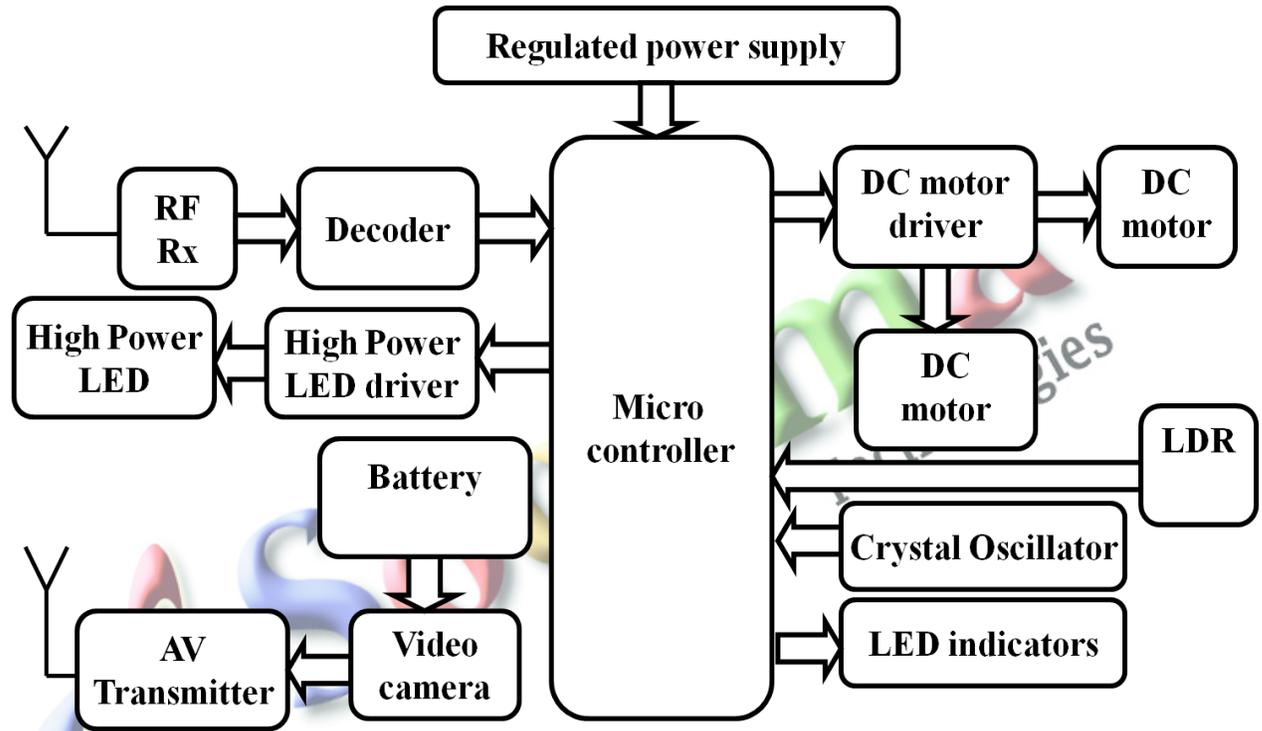
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## 1. Transmitter



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### 2. Receiver



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### 3. At TV

