WIRELESS MOUSE WITH MEMS ACCELEROMETER

ABSTRACT

The project is aimed to design a "Wireless mouse with MEMS accelerometer" using which the movements of the mouse can be controlled wirelessly by using MEMS accelerometer.

Micro electromechanical systems (MEMS) (also written as micro-electro-mechanical, Micro Electro Mechanical or microelectronic and micro electromechanical systems) is the technology of very small mechanical devices driven by electricity and it merges at the nano scale into nano electromechanical systems (NEMS) and nanotechnology.

MEMS are separate and distinct from the hypothetical vision of molecular nanotechnology or molecular electronics. MEMS are made up of components between 1 to 100 micrometers in size (i.e. 0.001 to 0.1 mm) and MEMS devices generally range in size from 20 micrometers (20 millionths of a meter) to a millimeter. They usually consist of a central unit that processes data, the microprocessor and several components that interact with the outside such as micro sensors.

The project will be designed in such a way that the controller will be interfaced to MEMS as well as to the RF transmitter via RF encoder. The main aim of this project is to control the movements of mouse using MEMS. The MEMS will be taken into the hand. If the hand moves in a particular direction, the mechanical movement of the hand will be recognized by MEMS. MEMS convert this mechanical hand movement into equivalent electrical signals(X, Y, Z coordinates) and send it to the microcontroller. The communication between microcontroller and MEMS takes place based on i2c protocol. In this protocol microcontroller acts as a master and MEMS acts as a Slave. The master receives signals and transmits them through RF transmitter to the RF receiver which will be interfaced to the controller on the receiver side. The RF receiver will be interfaced via RF decoder to decode the data into 4 bit digital data. And this controller will also be interfaced to the PC via serial driver IC max232.

The received data from the RF receiver will again be transmitted to PC from the controller through MAX232. And here the front end application will be developed in PC on c# .NET platform to control the movements of mouse based on the data received.

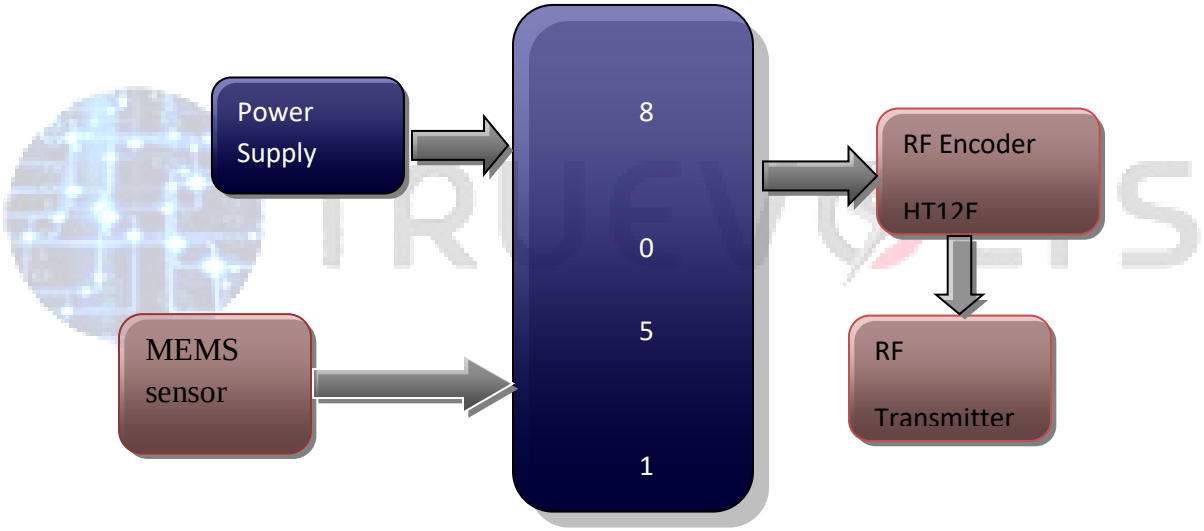
This project uses regulated 5V, 500mA power supply. Unregulated 12V DC is used for relay. 7805 three terminal voltage regulator is used for voltage regulation. Full wave bridge rectifier is used to rectify the ac output of secondary of 230/12V step down transformer.

APPLICATIONS

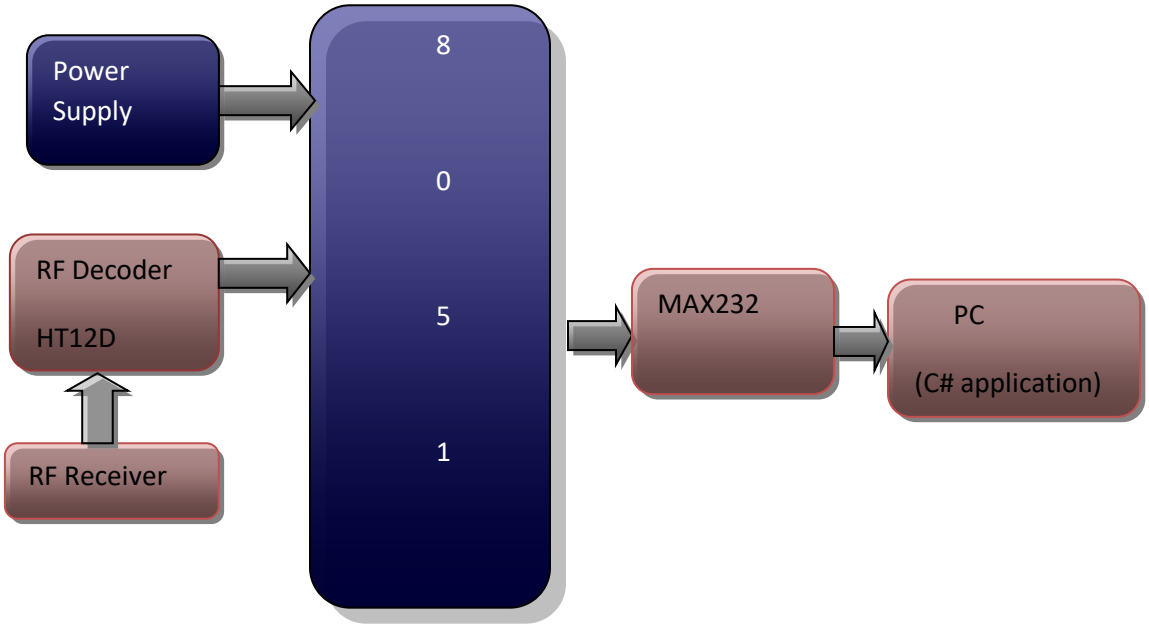
- Industrial applications
- Automatic control systems

BLOCK DIAGRAM:

TRNSMITTER SECTION:



RECEIVER SECTION:



POWER SUPPLY BLOCK DIAGRAM: