

GSM BASED CONTROLLING OF COIL GUN USING DTMF TECHNOLOGY

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Abstract : Our project GSM based controlling of gun using DTMF technology, is an electromagnetic gun that can be controlled by a person at anywhere around the globe. The system use a DTMF (Dual Tone Multi Frequency) technology for controlling the coil gun. That can be make possible through the support of GSM (Global System for Mobile) network. The controlling process is carried out by the programmed microcontroller (AT89C52), which is more faster. The Electromagnetic Induction can be used to rifle the bullets, So we can easily increase the power of the gun by adding the number of coil stages and increase the number of turns. Our project is one of the safest and secured weapon.

Index Terms: GSM, DTMF,

I. INTRODUCTION

The concept of Triggering/Position/Motion control has evolved since end of 18th century. Simply, triggering/position/motion control means to control the movement of the object accurately based on different physical parameters such as speed, load, distance, inertia etc. individually or a combination of these factors. Different types of techniques are used to control the Coil gun and speed of the AC motor, DC motor or Stepper motor. These methods includes digital or analog inputs, concept of Phase locked loop (PLL) etc. The common means of controlling devices are using switches. Since, last few decades use of remote control switches like-wireless remote control, Infrared remote control switch, Light activated switches have become popular for controlling various devices/loads. However, these techniques have their own limitations for short distance applications. We introduce the GSM based remote controlling using DTMF technology. The existing GSM and DTMF technologies are used in the mobile communication area, Were we use these technologies to remotely access the devices. In some situations the system which does not require any radiations, which is not harmful, which is most powerful and effective to use is long remote control switch. It can be used from any distance from meters to thousand kilometers using a simple telephone line or mobile phone.

A coil gun is a type of projectile accelerator consisting of one or more coils used as electromagnets in the configuration of a linear motor that accelerate a ferromagnetic or conducting projectile to high velocity.^[1] In almost all coil gun configurations, the coils and the gun barrel are arranged on a common axis. It is not a rifle as the barrel is not rifled. Coil guns generally consist

of one or more coils arranged along a barrel, so the path of the accelerating projectile lies along the central axis of the coils. The coils are switched on and off in a precisely timed sequence, causing the projectile to be accelerated quickly along the barrel via magnetic forces.

For ferromagnetic projectiles, a single stage coil gun can be formed by a coil of wire, an electromagnet, with a ferromagnetic projectile placed at one of its ends. This type of coil gun is formed like the solenoid used in an electromechanical relay, i.e. a current-carrying coil which will draw a ferromagnetic object through its center. A large current is pulsed through the coil of wire and a strong field forms, pulling the projectile to the center of the coil. When the projectile nears this point the electromagnet must be switched off, to prevent the projectile from becoming arrested at the center of the electromagnet.

II. OBJECTIVE

To control the position of a coil gun as well as fire it.

To utilize the existing GSM network as the low cost remote RF communicator

III. SCOPE

After modification and correction, The same project is integrated with a real time robotic arm control world coordinate position control. It can also be used for remote RF controlled switchgears, anti-aircraft gun positioning, antenna deployment mechanism in satellite etc.

IV. SYSTEM DESCRIPTION

In this system, the controlling of a coil gun is controlled with the help of a microcontroller and DTMF technology. Here describes DTMF for controlling coil gun through AT89C52 microcontroller with existing GSM network for the advantage of simplicity and audibility DTMF of mobile phone for controlling coil gun remotely. Mobile devices, like cell phone or smart phone are being used to monitor and control remote devices. Human-Robot interaction mechanisms that allow a human commander to control a mobile robot via cellular phone is targeted to develop here

In the present project the triggering of coil gun has been controlled remotely using GSM link based DTMF signaling through microcontroller. Wireless position control can also be achieved through RF transmitter and receiver but in case of RF communication; devices using similar frequencies such as wireless phones, scanners, wrist radios, personal locators etc. can interfere with transmission. In the present scheme GSM based DTMF signaling Technology has been used to implement here for controlling the coil gun remotely anywhere in the world through mobile phone network. DTMF decoder has been used to decode the DTMF signal. The decoded signal has been read by the microcontroller through its I/O port and generates the control signal to trigger the coil gun.

V. SYSTEM ARCHITECTURE

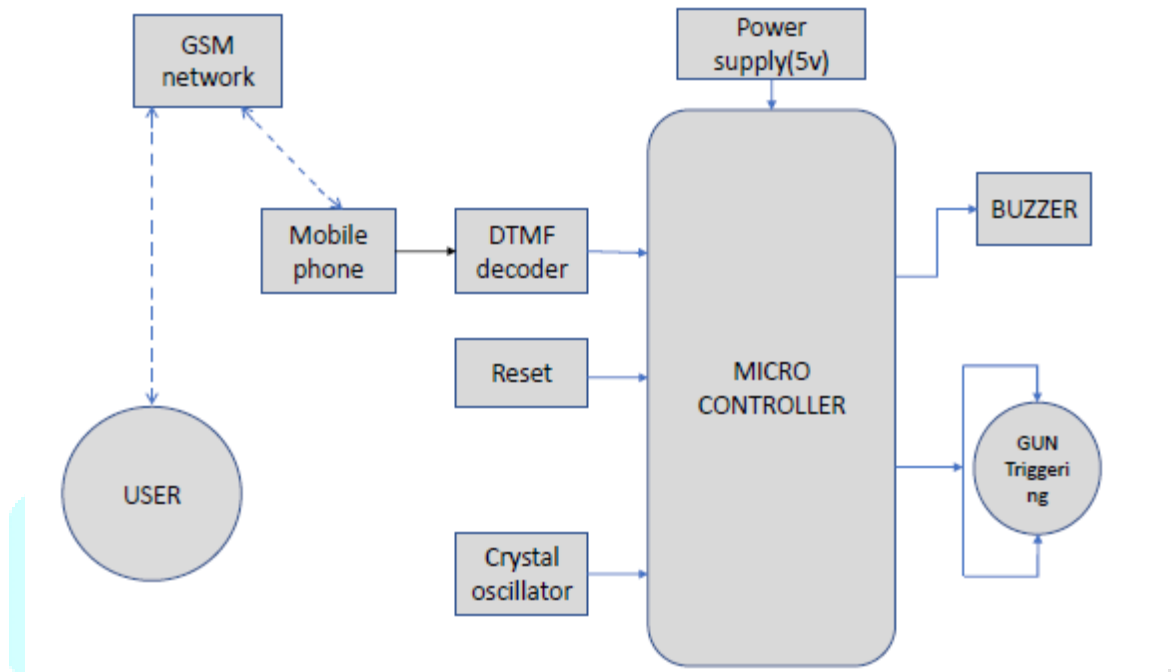


Figure V.1 : System Architecture

In the above figure shows the system architecture of the our project. In this architecture, it consist of a user section and a receiver section. The user section gives the appropriate input signals for the processing and triggering of the gun. The communication between the user and the receiver section is enabled through the GSM network. When the user press the appropriate triggering

button on the mobile phone, the corresponding DTMF signal is generated in the mobile phone. This DTMF signal has to be decoded in order to recognize the input key given by the user. For that a DTMF decoder is used in the receiver section to decode the DTMF signal and it is given as input to the micro controller. The micro controller is preprogrammed to work with each of the specific key inputs and when the decoded DTMF signal is received in the micro controller, the input and predefined key is compared to make the appropriate action for the respective key.

A crystal oscillator is used in system for generating the clock pulse needed for the working of the micro controller. The micro controller works in 5V and a buzzer is used to notify that the triggering is going to be carried out.

VI. CONCLUSION

The developed system is user friendly.Can be used to control the coil gun from the remote place and still Keeps the privacy and it restricts the access from unauthorized user. By a slight modification this system can be used for controlling more than one stepper

motors simultaneously. A multiple axis control is possible in robotic control application, Antenna steering mechanisms, Camera positioning etc., Multiple degrees of freedom from distant location using wireless GSM link. Output of the system will be highly accurate.

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