

## GSM Based Password Authenticated Control Over Electrical/Electronic Appliances

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### ABSTACT

Now a day controlling the electrical/electronics devices by the remote is usually demanded by the users and we want to control the devices even if we are not there in our home/office but if we are there in the same area. But what if we want to control the same when we are not even a one country and that too on a very low cost. So we are introducing a technique over here by which any electronic/electrical instrument can be controlled by any location, from any country and from any region.

All we need a GSM network and phone connection and the connecting technology so by making a simple phone call we can control the appliances from any where in the world and on a very low cost. After reading this paper a new user will understand how to control electrical/electronics appliances at any time and from any where in the world with just a simple phone call set up with a password authorization that is very cheap approach.

**KEYWORDS-** GSM, DTMF, Relay.

### I. INTRODUCTION

This technique of monitoring/controlling the appliances is to implement a microcontroller/C language -based control module that receives its instructions and commands from a cellular phone over the GSM network. The microcontroller then will carry out the issued commands. For security purposes, a means of identification and user authentication will be implemented, and will combine caller identification with a password authorization. To use the control unit, the user will send an authentication code along with the desired function to his/her home control system via

GSM. Upon being properly authenticated, the cell phone-based interface at home (control unit) would relay the commands to a microcontroller that would perform the required function. Now we cab see how to implement this service in our homes or office in the following steps.

### II. WORKING CONDITIONS

The control system will include two separate units: the cellular phone, and the control unit. There will therefore be two operating environments. The cellular phone will operate indoors and outdoors whereas the control unit will operate indoors.

### III. TECHNOLOGY USED

A land line phone is being used most of the times. If a land line phone is used than a separate ring detector circuit is required for detecting the number of rings and then picking up the phone. It uses an extra relay and we have to enter inside the mechanism of phone.

Now we have used the auto answer facility which is present in many of the cell phones today, so we escaped from designing the ring detector circuit.

Right now we have considering the technique for control of two devices but it can be designed for more number of devices. It can be further expanded with a voice interactive system facility. A feedback system can also be included which provides the state of a device (whether it is on/off) to the remote user.

### IV. REQUIREMENTS

1. An authenticated user can control two home appliances from any remote place having mobile phone network.
2. Regulated power supply: 5V and 500ma.

3. Relay: 230v AC
4. The system requires two phones out of which the one present at the control unit has to be a cell phone with auto answer facility.

#### **Block Diagram Description:**

##### *Phone on the transmitting side:*

The person who wants to switch on/off any device kept at the controller side calls from a phone and, once the call gets picked up, enters the password and tones for a corresponding device. Every key has to be pressed for a minimum amount of time to get it latched at the decoder IC.

##### *Mobile phone on the receiving side:*

The mobile phone on the receiver side picks up the phone automatically after 5seconds, and then makes the tones available to the DTMF tone decoder IC through the headphone jack of the phone.

##### *DTMF Tone Decoder IC:*

The DTMF tone decoder IC converts the received tones to their respective binary values and then gives them as an input to the microcontroller.

The DTMF tone decoder IC's internal architecture consists of a band split filter section which separates the low and the high tone of the received tone pair, followed by a digital decode(counting) section which verifies both the frequency and duration of the received tones before passing resultant 4-bit code to the output bus. These 4-bits along with a bit which validates a received tone are given as an input to the port1 of microcontroller.

##### *The Microcontroller:*

The five output bits of the decoder IC serve as an input to port 1 of the microcontroller. Then each tone is verified by the programmed microcontroller and once a correct sequence of code is received, output corresponding to the tones sent by the user is made available at the port0, which is connected to relay through a relay driver.

##### *Relay Circuitry:*

The output from the port0 of the microcontroller is given to the relay driver IC which drives the corresponding relay, to which the home appliances are connected.

##### *Home Appliances:*

One terminal of each appliance is connected to relay and the other terminal is connected to 230v AC. As

soon as the relay gets driven by the microcontroller the device gets switched on/off.

## **V. ASSUMPTIONS**

1. The user and control unit will establish communication via GSM.
2. Less money as we have to make a single call.
3. The controlled appliances will have to have an electrical interface in order to be controlled by microcontroller.

## **VI. CHALLENGES**

1. Programmer for microcontroller: Preparing a programme for the microcontroller, it is very necessary to look after the correct programme and the correct IC.
2. PCB printing: For getting a printed PCB for our circuit we first needed to design a layout. We learnt that in software named 'DIPTRACE' we can draw a schematic of a circuit and then get its layout. So we learnt this software and printed a layout of correct scale to actual components. Learning the software may be complex task.
3. Programming the microcontroller: We have to programme the micro control Many a times and test it, until we get the final result.

## **VII. APPLICATIONS**

This technique can be used for the users who wish to control household appliances remotely from their cell phones provided that the appliances are electrically controllable. Example of feasible appliances and applications under consideration include; enable/disable security systems, fans, lights, kitchen appliances, and heating/ventilation/air conditioning system

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