

Study of Fuzzy Control Algorithm of Security Alarm System and Integrated System with PIC - Emergency Lamp Controller

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<Abstract>

In this paper, we present the method that improve alarm security system using the electronic circuits added the emergency lamp by our proposed Algorithms. In conventional method the emergency lamp of warning & alarm system didn't work perfectly its performance because of battery with short life. For improving this problem we, using Peripheral Interface Controller IC, designed the circuit added the emergency lamp for an warning & alarm system and for prevention against stopping the electric current, and compared our proposed method with conventional method.

By designing the circuit to stop up over charge we can extend life of battery, use for a stoppage of electric current in emergency and according to the lightness around. Therefore we are very convenient and profitable in our life.

In the future we will study the method to lower the cost of architecture for practical utilization

I. Introduction

The purpose of this proposal is composed of a cheap and monthly costless managerial of burglar alarm system.

Recently, with progress accelerating of electrical and electronic industry, security alarm system has been developed into many kinds of type by semiconductor device[1].

It is made for protection of lives and protections that a burglar trespass a house and market, when it has emergency condition, then it's system promptly keep in communication with other guardhouse.

The existing alarm system is so high price and equipment cost, and then it has many problems. And emergency lamp for interruptible has been installed corridor and stairway of the multiple-house and residence. But it has a problem error of charge system actuated by the bad charge condition of battery, after six month installing of it[2]. And thus, traditional emergency lamp has meaningless effective and useful of economic. And also, the existing security alarm system has not installed emergency lamp. When it had detect a intruder person[3]-[5], and then it happened a emergency signal. It is very useful that it has turn on emergency lamp or disconnected and interruptible of power.

The system is going to turn on the emergency search light when the main system has a interruption of service. And then a watchman can be easily aware of the inside emergency condition of market building and house at the exterior environments.

The alarm signal of exterior system is going to not siren but a burglar alarm whistle voice and its voice can easily be recognized between the main system and the circumference voice.

Actually, it must detect interruptible or intrude person. In this study, among the discern methods, it has control to emergency with PIC(Peripheral Interface Controller)[6].

II. Theory

The main circuit of security alarm has a detect function of door or body sensor. And then it turn on emergency lamp. When system has a interruptible or disconnect condition, emergency lamp maintain turn on. This system is composed of three input sensor(door, human, interruptible and disconnect) PIC.

II. I Traditional emergency lamp for interruptible

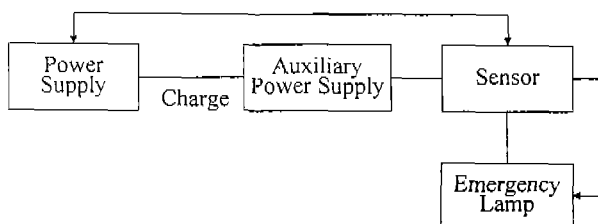


Fig.1 Block diagram of the emergency lamp circuit

As Fig.1, turn on the power, battery starts charge with auxiliary power and then it has operate traditional emergency lamp with detect of the disconnect power. If the system has not interruptible during the six month, auxiliary power maintain charges condition and then the effect of charge decrease.

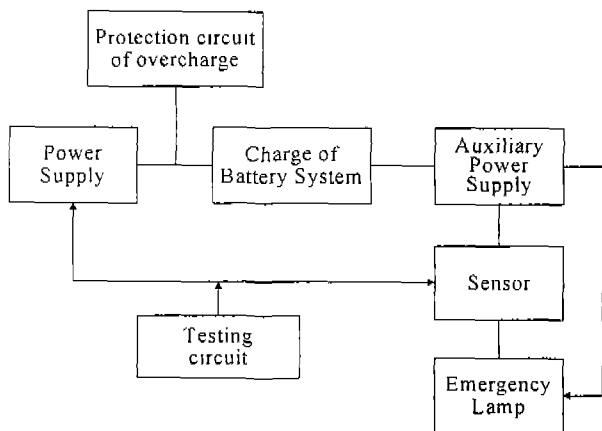


Fig.2 Block diagram of the modified emergency lamp circuit

As Fig.2, circuit of protect overcharge has prevent overvoltage and battery of auxiliary power. And then it prolongs of

the battery durability. When it is rainy or dimmer day, it turn on the emergency lamp and discharge of the battery. Also over discharge has short of battery durability. The program of PIC with scheduled time has operated emergency lamp and then its lifetime is longer. As Fig.3. when the program of PIC detect signal, it discerns a intruder person and disconnects power and then operates the emergency lamp.

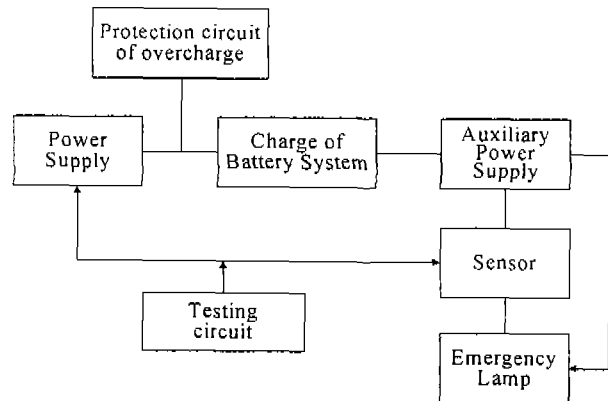


Fig.3 Block diagram of the emergency lamp controller for warning & alarm system

III. Configuration of System

III. I Circuit of charge

When battery has charge by transformer, increase of the battery voltage block flow of the charge current. It must flow constant current by boost transformer.

When setting point of the voltage placed on finished charge time, the base potential of Q2 reached the potential. And then Q2 is turned on, the primary of photocoupler has short and charge current has stopped automatically.

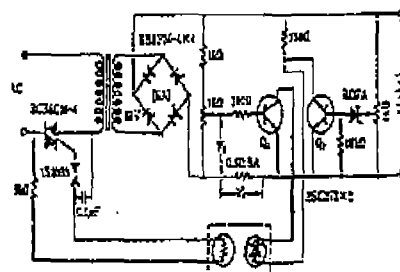


Fig.4 Automatic charge circuit of battery

III. II PIC (16C5X intra structure)

The interior of PIC16C5X is divided into CPU, EPROM, RAM, I/O and counter parts. The CPU part is composed of ALU, Instruction Decoder and Register. The EPROM has content 12 bit of program memory from 32byte to 80 byte as type as.

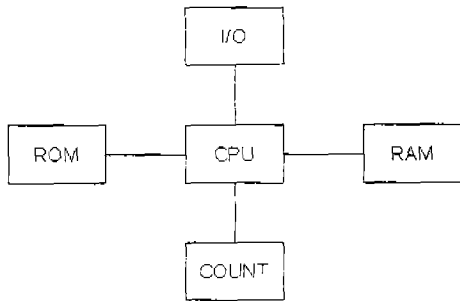


Fig.5 Block diagram of PIC

The I/O port is divided into twelve and twenty ports type. And it has a function to instruction of input/output port freely as 3 Status.

The counter is composed of 8bit RTCC, 8bit WDT and 8bit pre-scaler. The inner at counter parts has a reset circuits with OST.

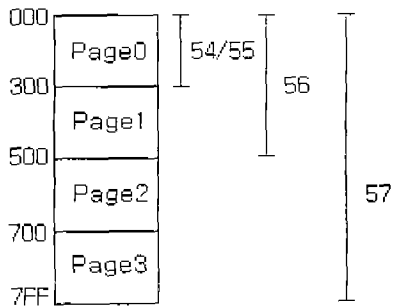


Fig.6 PIC 16C5X block diagram

III. III System

As Fig.7, the signal controller add to traditional emergency lamp, in order to discern interruptible or intrude. And then the emergency lamp is turned on by signal of sensor.

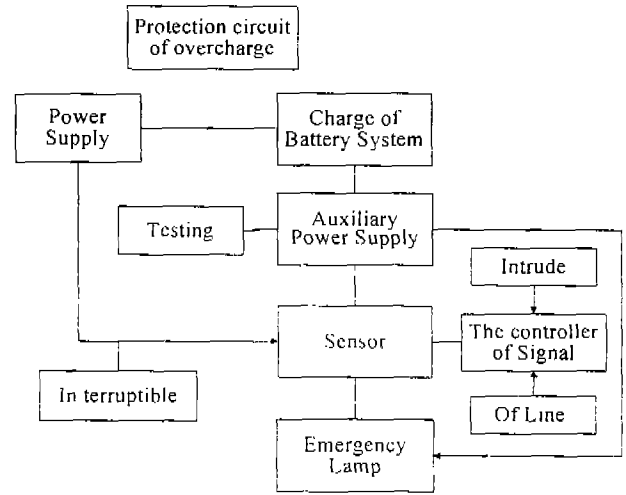


Fig.7 Block diagram of systems

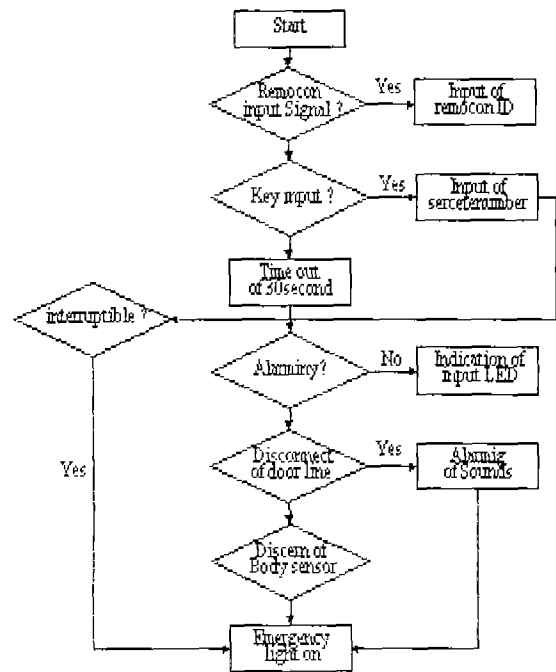


Fig. 8 Flow chart of the emergency light

As Fig.8, the PIC of micom receive into re-mocon ID input. The next time, it receives key input and take condition of alarm after 30 seconds. The detection of door sensor turns on emergency lamp with RF signal. When it takes only interruptible signal, it does not send signal. And then the emergency lamp turns on.

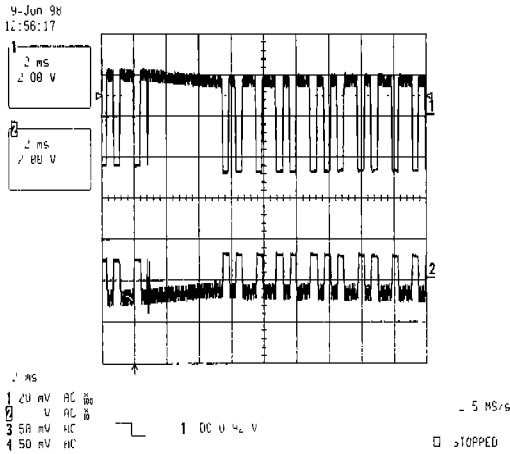


Fig. 9 The output waves of door RF sensor

As Fig.9, the top and down waveform are represented input of RF module output waveform. The emergency lamp turn on to right or not ID.

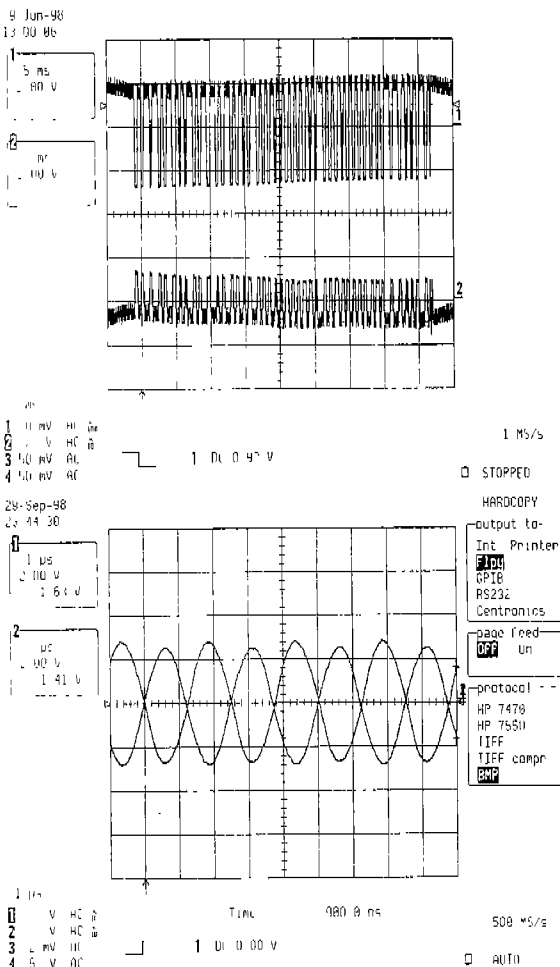


Fig. 10 The part of telephone signal

Fig. 11 The function generator of PIC(4Mhz)

Fig. 10 and Fig. 11 represent telephone signal and function generator of PIC. The frequency range of PIC is 4MHz. The telephone signal represents on/off of the voltage from public telephone office.

IV. Conclusion

In this paper, we try to compare traditional emergency lamp with emergency lamp for alarm security using PIC. As experimental results, we get as follow

- 1) Addition to overvoltage of alarm system, Battery system durability is longer.
- 2) It is convenient to use with environmental lightening.
- 3) It has a advantage of a combined use at emergency or interruptible condition.

This system is used widely for multipurpose and effectively. But it has a problem with realization will try to study about utility of this system.

Reference

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