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ZIG-BEE BASED SECURITY AND ENERGY MANAGEMENT SYSTEM

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ABSTRACT
Now a day's automatic fireplace detection and management is changing into terribly essential to cut back the fireplace within the building and business. Automatic fireplace device provides period of time police work, shift and automatic alarm. A fire place protection is to grasp regarding developing fire emergency at the time and attentive to dominant station through wireless communication. Sound sensors work by mimicking the physical body method that involves the ears and signal transmission to the brain. Sound sensors that convert a sound signal into a voltage or current proportional to the detected signal and send a sign via Zig-Bee to receiving station.
KEYWORDS: Zig-Bee, Smoke sensors, Sound sensor, DVR (digital vedio recorder), CCTV Camera, LCD, PIC.

I. INTRODUCTION

Fire detection and horrible system suggests that of automatic data of potential fireplace unfold in industrial buildings.. For energy management we tend to square measure mistreatment relay circuit. Relays square measure switches that open and shut circuits electromechanically or electronically. Relays management one electric circuit by gap and shutting contacts in another circuit. There square measure 2 main management circuits during which one is transmitter and receiver. Zig-Bee based mostly security systems are often placed anyplace that users will get data regarding indoor or outside areas. there's a 1 alarm and observance system is functioning once a hearth happens. As such, the warning device ought to be tested monthly to form positive all sensors and transmitters square measure operating properly. during this system we tend to also are use a sound sensing element. that treat the edge price in decibel. For the human voice it's unremarkably 40dB. If sound will increase on the far side this it indicates a lot of noise therein space. therein case it sends the signal to the receiver. In Zig-Bee based mostly security system information transmitted by Zig-Bee protocol and that we will send the data to receiving and dominant station. reckoning on threshold price control function are often dead by remote terminal ends up in ON/OFF in every branch circuit. in order that electrical fires are often avoided.

Photograph 1: Zig-Bee

II. LITERATURE SURVEY

Wireless detector network contains completely different variety of sensors and along it forms a network. there's no got to predetermine the position of the fireplace detector nodes simply set the position of sound detector. By mistreatment Zig-Bee protocol the electricity information is collected to produce relevant details to user. in order that the user will management the appliances utilized in home. As a result energy are going to be saved . Security mechanism in buildings relating to power consumption is incredibly a lot of vital and basis for building a secured system. Energy management is incredibly vital issue. With the assistance of the relay circuit we are able to secure it

A. ZIG-BEE BASED SECURITY SYSTEM

In Zig-Bee primarily based security system information transmission is finished through Zig-Bee protocol. sensible node used this method live temperature and power parameters. Transfer this data via Zig-Bee to base node. reckoning on threshold price operation may be dead by link-attached terminal ends up in ON/OFF in every branch circuit. so electrical fires may be avoided.

III. METHODOLOGY

The most common explanation for associate warning device not functioning once a hearth happens is insufficient maintenance. As such, the warning device ought to be tested weekly to form positive all sensors and transmitters square measure operating properly. though designed for long life, hearth alarm devices together with smoke detectors could fail at any time. it's suggested that residential smoke detectors ought to get replaced each five years. Any smoke detector, hearth warning device or any part of that system that fails ought to be repaired or replaced at once. The goal of this PIC microcontroller project is to style a Controlled Residential Smoke/Fire Detector System.

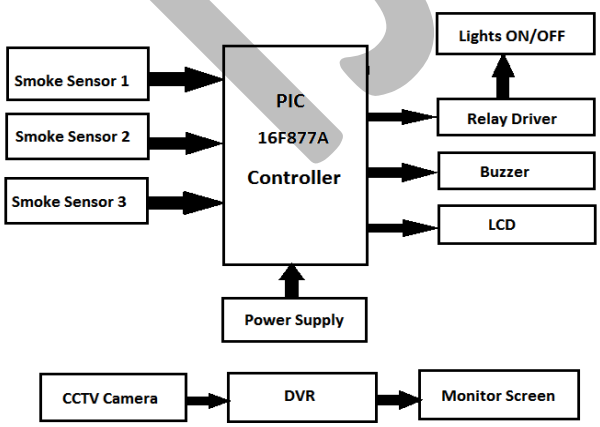


Figure 1: Block Diagram

III. HARDWARE DETAILS

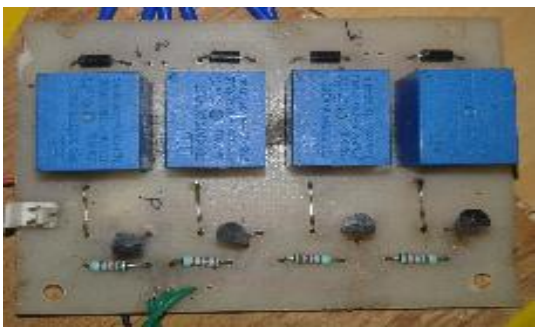
A. PIC 16F877A MICROCONTROLLER

Early models of PIC had browse solely memory (ROM) OR field programmable erasable programmable read-only memory fro program storage, some with provision for erasing memory. All current models use non-volatile storage for program storage, and newer models permit the PIC to program itself. Program memory and information memory ar separated. information memory is eight, 16, and thirty two bit wide. Program directions vary in bit count by family of PIC, and should be twelve, 14, 16, OR twenty four bits long. The instruction set conjointly varies by model, with a lot of powerful chips adding directions for digital signal process functions. This controller is extremely convenient to use, the writing or programming of this controller is additionally easier. one in every of the most benefits is that it will be write erase as over and over as attainable as a result of it use non-volatile storage technology. it's a complete range of forty pins and there ar thirty three pins for input and output.

Photograph 2: PIC 16F877A Microcontroller

B. RELAY

Relay is associate magnetic attraction device that is employed to isolate 2 circuits electrically and connect them magnetically. they're terribly helpful devices and permit one circuit to change another one whereas they're fully separate. they're typically accustomed interface associate electronic circuit (working at a coffee voltage) to associate circuit that works at terribly high voltage. A relay switch is often divided into 2 parts: input and output. The input section contains a coil that generates force field once a tiny low voltage from associate electronic circuit is applied to that.



Photograph 3: Relay Circuit

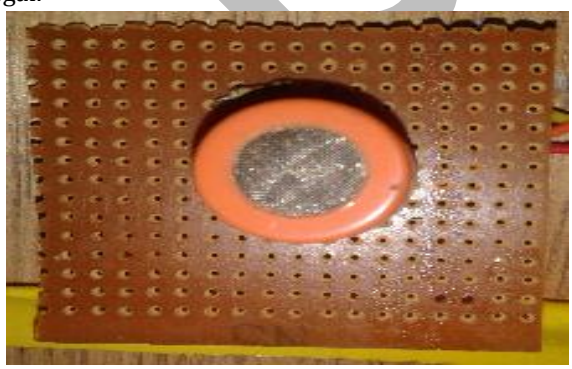
C. POWER SUPPLY

A regulated power provide is incredibly a lot of essential for many electronic devices owing to the semiconductor material used in them have a set rate of current yet as voltage. The device could get broken if there's any deviation from the mounted rate. The AC power provides gets born-again into constant DC by this circuit. By the assistance of a transformer DC, unregulated output is mounted to a continuing voltage. The circuit created is formed is created} of linear transformer 7805 alongside capacitors and resistors with bridge rectifier made up from diodes. From giving associate unchanging voltage provide to assembling assured that output reaches uninterrupted to the appliance.

PHOTOGRAPH 4: POWER SUPPLY

D. SMOKE SENSOR

A smoke detector could be a device that senses smoke, usually as Associate in nursing indicator of fireside. industrial security devices issue a symptom to a fireplace alarm board as a part of a fireplace alarm, whereas unit smoke detectors, conjointly called smoke alarms, typically issue an area sounding or visual alarm from the detector itself. Smoke is detected either optically (photoelectric) or by physical method (ionization), detectors might use either, or both, methods. Sensitive alarms is wont to observe, and so deter, smoking in areas wherever it's illegal.



Photograph 5: Smoke Sensor

Table 1: The function of each system block

Sr. No.	System Block	Function
1	Microcontroller	As data processing center
2	Zig-Bee	As transmitter and receiver of signals
3	Smoke Sensor	As smoke detector
4	Sound Sensor	As noise detector
5	CCTV Camera	As live surveillance
6	Relay	As a protective switch
7	Buzzer	As indicator
8	Display	As status indicator

IV. CONCLUSION

This is in progress project. This paper offers an inspiration regarding zig-bee based mostly security and energy management system for protecting theme. associate automatic hearth alarm and voice system supported wireless communication and its management. The system provides early extinction of a hearth disaster in order that damages are reduced effectively. With this project we will scale back the wastage of electricity. If any fault happens then it'll defend whole system. we will observe whole system with the assistance of CCTV cameras. Future scope of our project is extremely high. we will implement this technique in industrial likewise as in industries.

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