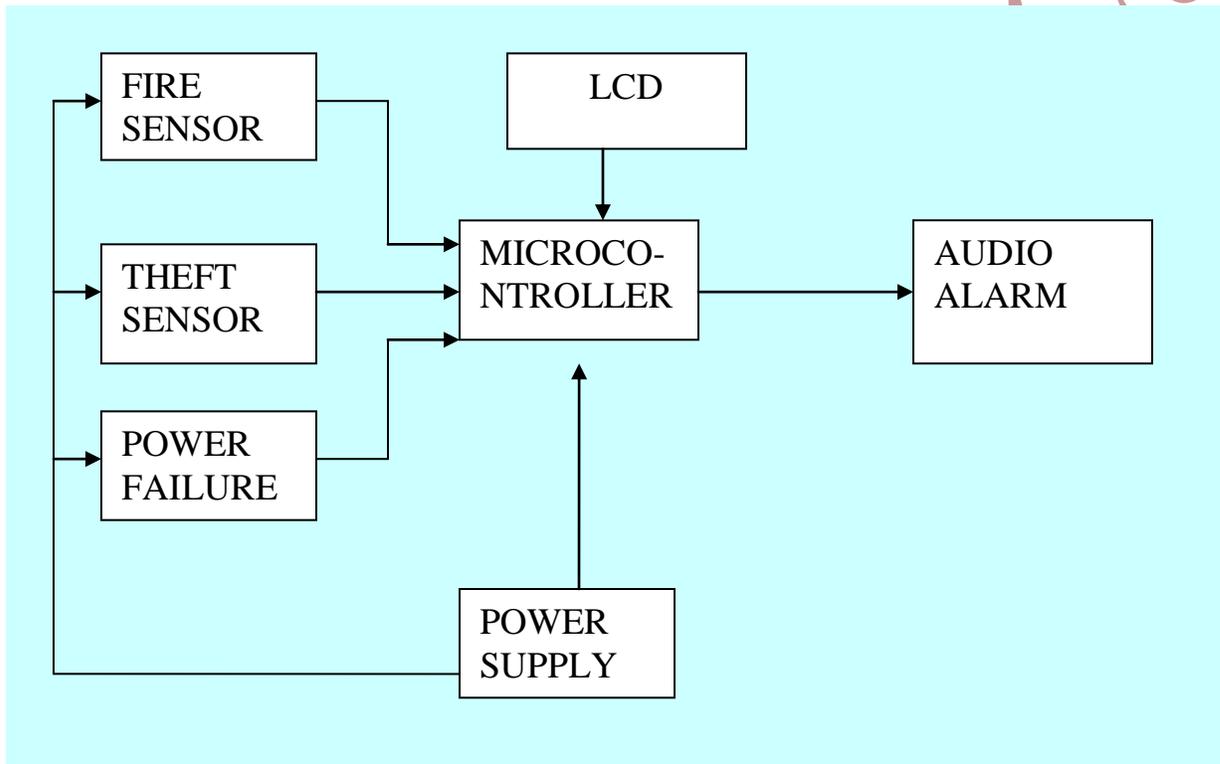




## Punjab Project

### BTS SECURITY SYSTEM

#### INTRODUCTION:



Block Diagram of BTS Security System

In the project “BTS Security system” we have shown the concept of an automatic BTS security. As in the modern world everything is going automatic we have built a system which will automatically sense Power failure, Fire and the entry of an unwanted person in the absence of the security guard of the BTS. We have deployed a microcontroller which is used to sense the signals from all the sensors which are placed in the BTS for sensing different types of failures or security conditions. It is also possible to send a message



## Punjab Project

when there is any unwanted situation sensed by security system, apart from this an audio alarm is also planted in the BTS which will get activated at that time.

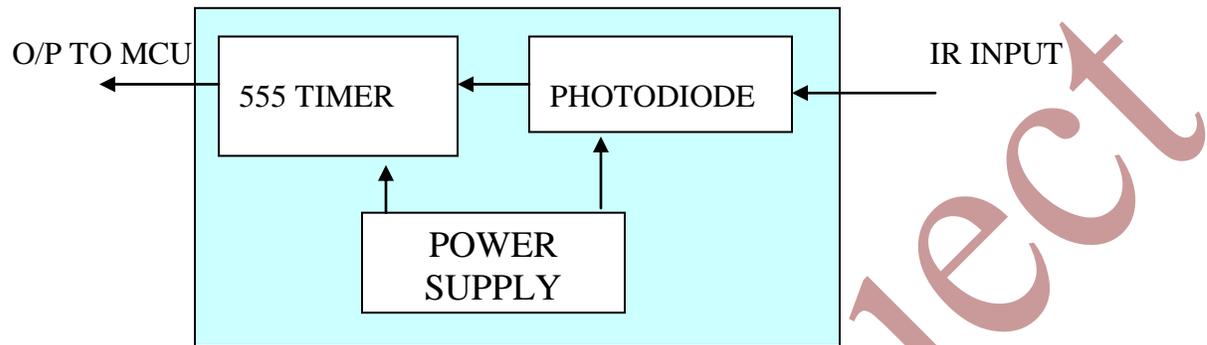
There are three sets of sensors: one of which sense any type of Power failure , second will sense the entry or exit of any unwanted person in the absence of security guard of BTS, third for sensing any type of fire . When any type of Power failure is sensed by the Power failure sensor it will get activated and give a low signal to microcontroller's pin, and this pin when sensed by the microcontroller then it will activate the alarm. Similarly when any person enters in the house through the door then an intruder circuit (which acts as a sensor for sensing the entry or exit of an unwanted person) will get activated and give a low signal to microcontroller which is sensed by the controller. Then controller in turn activates the alarm. Similarly when any type of fire is sensed by the fire sensor it will get activated and a low signal is send to the microcontroller which in turn activates the alarm.

The entrance or the exit of a person in the room is detected by using two infrared modules. Each module will contain an IR transmitter and an IR receiver. Before the door the Infrared transmitter is mounted on one side and the receiver is placed directly in front of the transmitter on the other side of door. Infrared transmitter will continuously transmit IR waves and the receiver will continuously receive IR waves. The IR transmitter will use an IR LED. This LED can transmit IR whenever it is supplied from a 5-volt voltage source. The receiver can either be photodiode if the width of the door is less or a special IR receiver known as the IR eye. Now whether a person enters or exits, the beam of will be interrupted that is the output from the receiver which actually is the pulse output from the monostable multivibrator using 555 timers. Thus the outputs from the receiver is in the form of pulse.



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### BLOCK DIAGRAM FOR IR RECEIVER



At the receiver side the IR eye or the IR demodulator will demodulate the IR signal and then give its output to the trigger of a 555 timer, which is mounted as a monostable vibrator. Thus whenever there is an interrupt in the IR beam then corresponding trigger will go from high to low thus the output from the 555 timer will be a pulse which is then generated as in monostable mode by applying a  $-ve$  voltage at the trigger a pulse is generated.

This change in output pulse is sensed by the microcontroller and accordingly it activates the alarm.

#### **MICROCONTROLLER UNIT:**

This part of our project is the heart of the project which controls whole the processing of the project. It senses all the sensors & performs action according to input from sensors. MCU used in our project is AT89S52 which is family member of Intel's 8051.

#### **Interfacing with LCD**

LCD makes this instrument user friendly by displaying everything on the display. LCD used in the project is 16 x 2. It is an intelligent LCD module, as it has inbuilt controller which convert the alphabet and digit into its ASCII code and then display it by its own i.e. we do not required to specify which LCD combination must glow for a particular alphabet or digit.

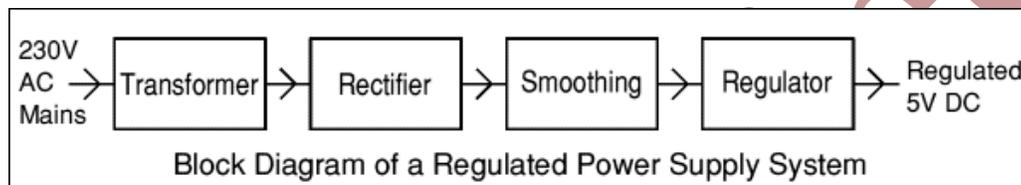


## Punjab Project

### POWER SUPPLY:

Power supplies are designed to convert high voltage AC mains to a suitable low voltage supply for electronics circuits and other devices. A power supply can be broken down into a series of blocks, each of which performs a particular function.

**For example a 5V regulated supply:**



**Each of the block has its own function as described below**

1. Transformer – steps down high voltage AC mains to low voltage AC.
2. Rectifier – converts AC to DC, but the DC output is varying.
3. Smoothing circuit – smoothes the DC from varying greatly to a small ripple.
4. Regulator – eliminates ripple by setting DC output to a fixed voltage.