

## **REALIZATION OF HOME REMOTE CONTROL NETWORK BASED ON ZIGBEE**

### **Introduction:**

In various home applications, such as home appliance controlling, security systems and automation etc are not very easy to do it manually with human interaction.

The fact is it is not possible to access these areas directly because of the some physical and technological problems. So it is better to employ some automated devices to monitor and control these devices or security systems.

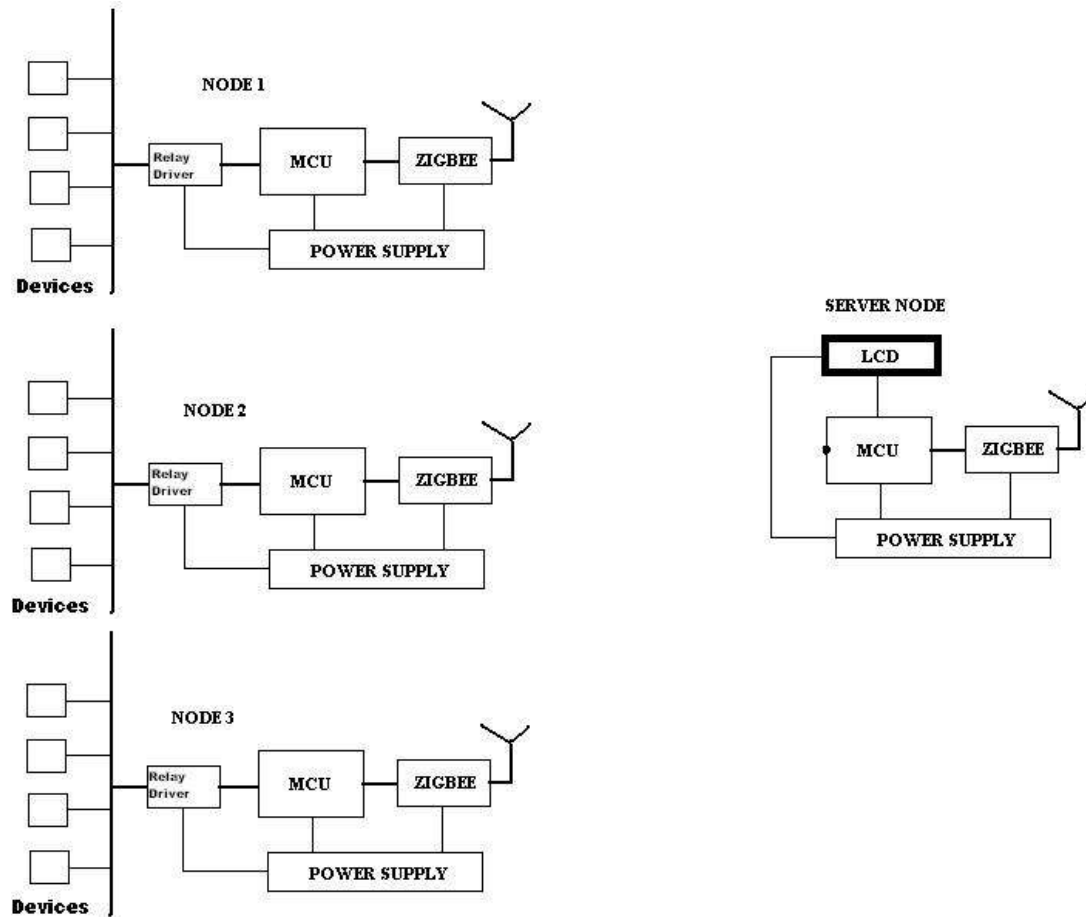
If it is a large housing colony, there will be a lot of devices and security systems to monitor and control. Connecting different monitoring and control equipments in different houses are not possible. All the houses should be monitored and controlled with one master system and this is a best approach also. Inter connecting all houses with wires are also not practical. It should be wireless. A better way is a wireless network that can communicate in between houses and the main server. Here comes the importance of wireless home automation and monitoring system network based on ZigBee.

### **Abstract:**

In this home automation and monitoring system, all the houses are fixed with sensors to capture different parameters and also with security systems. As the houses will be in different places we should do a wireless network to communicate with all the sensors fixed in different homes. For this wireless communication we use Zigbee protocol and technology to obtain a best result. We use single board computers to collect sensor information and send to the master equipment. In order to maintain various parameters like pressure, vibration and temperature master equipment server is used. Control different parameters will be done through communication between control equipment and control devices.

For the prototype we will interface temperature sensors and vibration sensors and these data will be sending over radio (zigbee) to the server and monitor these parameters and relays to control different devices.

**Block diagram:**



**Requirements:**

**Hardware:**

1. Controller – AT89S52
2. Zigbee \_ XB24
3. Power supply module
4. ADC \_ ADC0808
5. Sensors \_ LM35, Vibration sensor (Piezo electric plate), pressure sensor.
6. Relays.
7. LCD.

**Software:**

1. Embedded c
2. Keil microvision 3.
3. Phillips flash magic
4. express PCB

**Micro controller-AT89S52**

The AT89S52 is a low-power, high-performance CMOS 8-bit microcontroller with 8K bytes of in-system programmable Flash memory. The device is manufactured using Atmel's high-density nonvolatile memory technology and is compatible with the industry- standard 80C51 instruction set and pinout.

**Features:**

8K Bytes of In-System Programmable (ISP) Flash Memory

Endurance: 1000 Write/Erase Cycles

4.0V to 5.5V Operating Range

256 x 8-bit Internal RAM

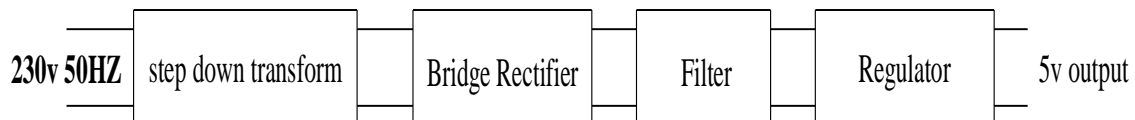
32 Programmable I/O Lines

Full Duplex UART Serial Channel

Fully Static Operation: 0 Hz to 33 MHz

**Power supply:**

The microcontroller and other devices get power supply from AC to Dc adapter through voltage regulator. The adapter output voltage will be 12V DC non regulated. The 7805 voltage regulators are used to convert 12 V to 5VDC.



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### **ZIGBEE:**

Zigbee wireless network technology is a new standard launched and made by ZigBee Alliance. The alliance, founded in August 2001, is a fast-growing and non-profit organization, and it aims to provide consumers with more flexible and easier electronic products. The second half of 2002, four large corporations including the British company Invensys, Mitsubishi Electric Corporation, Motorola and the Dutch giant Philips Semiconductor Corporation jointed together to announce that they would join the "ZigBee Alliance" to invent the next-generation wireless communication standards named "ZigBee", which became a significant milestone in the development process. In October 2004, the ZigBee Alliance announced a version 1.0 of ZigBee protocol, and in December 2005 version 1.1. This protocol is developed based on IEEE 802.15.4

Zigbee uses free frequency bands of 2.4 GHz and 900 MHz, and its transmission rate is 20 kbps to 250 kbps. In this project we are using standard Zigbee wireless network modules. The Zigbee module and protocol have been successfully applied to power system, medical and some other fields.

### **WHY ZIG BEE?**

Zigbee is a worldwide open standard for wireless radio networks in the monitoring and control fields. The standard was developed by the ZigBee Alliance (an association of international companies) to meet the following principal needs:

- low cost
- ultra-low power consumption
- use of unlicensed radio bands
- cheap and easy installation
- flexible and extendable networks
- integrated intelligence for network set-up and message routing

Some of the above requirements are related - for example, the need for extremely low power consumption is motivated by the use of battery-powered nodes which can be installed cheaply and easily, without any power cabling, in difficult locations.

In this project we are monitoring the temperature of High Power line conductors (Above 210 Kv). Since it is a high power transmission cable there will be a magnetic field around the conductor. This magnetic field will affect the data transmission and there is a chance to lose or corrupt the data if we use any other protocol other than ZIG BEE.

So ZIG BEE is the suitable technology for this kind of application.

