

ATMOSPHERE MONITORING AND AUTO CONTROL USING ARM BASED MULTIPLE MASTERS ECSN

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ABSTRACT

Embedded controlled sensor network is the technology used to implement environmental solutions effectively. Many researchers have been making attempts to develop the embedded controlled sensor network. The existing systems are bulky, very costly and difficult to maintain. The proposed system is cost effective and controlled by user friendly embedded systems. In the proposed system ARM based microcontroller and wireless sensors are used to control the various devices and to monitor the information regarding the environment using Zigbee and GSM technologies.

Keywords: GSM module, Zigbee module, ARM 7 Microcontroller (ARM LPC2148)

1. INTRODUCTION

In the twenty first century, there is revolution of the sensor systems which have additionally thought of different applications like observation, traffic control, environmental and wildlife monitoring, farming application, home automation and industrial process control Embedded controlled sensor systems (ECSN) are basically intended to be application- particular so that the vitality utilization is least as the battery-power nodes request life-time of a few months or even a couple of years. The architecture of a regular embedded controlled sensor Network as shown in fig:

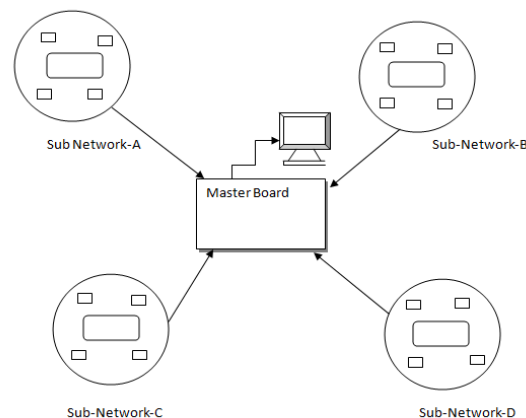


Fig-1: Embedded Control Sensor network

The available technologies are Bluetooth, Wi-Fi, Wi-Max, wireless mobile Ad-hoc network (WMANET), UMB, wireless HART, Bluetooth and Zigbee. Embedded sensor networks are shaped by communicating over wireless connections without utilizing an fixed networked base controlled by microcontroller. Zigbee is the name for a short-range, low-power, low-cost, and low-data rate wireless multi-hope network technology. block diagram of ECSN comprises of an expert circuit which is joined with number of sub networks comprising of the different slaves. Master circuit is joined by a Personal Computer which can be controlled by the internet. Wireless technologies for environmental monitoring and device control in homes offers many benefits to the users.

2. REVIEW OF PROJECT

Environment monitoring and device control permits new level of solace in homes and it can additionally deal with the utilization of energy which in turns promotes the savings. Remote controlling of the devices offers numerous preferences to senior citizens and individuals with disabilities which helps them in being more self-ruling and increasing personal satisfaction. In addition to remote control, observing temperature, flood and carbon monoxide in homes is additionally a significant concern. There is a serious need to monitor temperature or gasses as they might be excessive and destructive. A monitored low temperature sensor cautions about solidifying temperatures inside house. Likewise if the boiler, washer or pipes leaks in the home, it can result in extensive harm. Guangming Song (and so forth) [2] created a remote controllable power outlet system. Specialists have dealt with home computerization and environmental monitoring system in the past yet in the existing systems expense is high, size is an issue and they are hard to keep up. The proposed system is cost

ZigBee is a specification for a high level communication protocols used to design personal area networks from small, low-power digital radios. ZigBee is based on an IEEE802.15 standards. Though low-powered, ZigBee devices are transmit data to long distances by transforming data through mediators to reach more distant ones, creating a mesh network; i.e., a network with no base control or high-power transmitter/receiver can reach all of the networked devices. The decentralized nature of such wireless ad hoc networks make them suitable for applications where a central node can't be relied upon. Remote Control is the private expansion of building automation. It is computerization of the home, housework or household activity. Home automation may incorporate with centralized control of lighting, HVAC (heating, ventilation and air conditioning), appliances, security locks of gates and entryways and different systems, to provide enhanced convenience, comfort, energy efficiency and security.

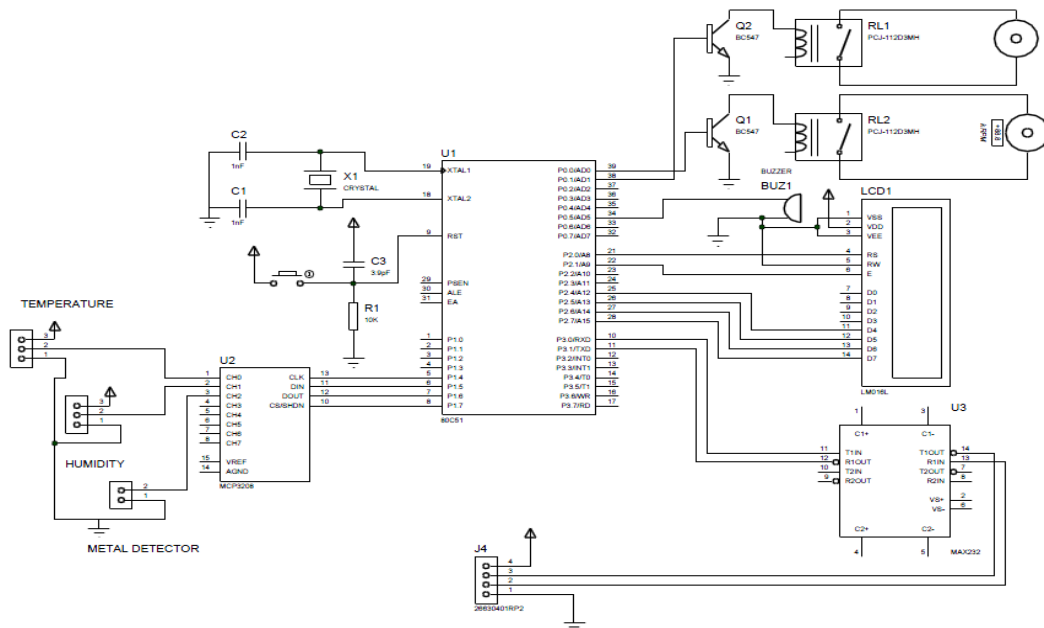


Fig-4: Circuit Diagram of Slave

The remote control circuit is designed using 8bit microcontroller. We have used 89C51 microcontroller to design the circuit. Circuit diagram of the remote is shown in figure 5.

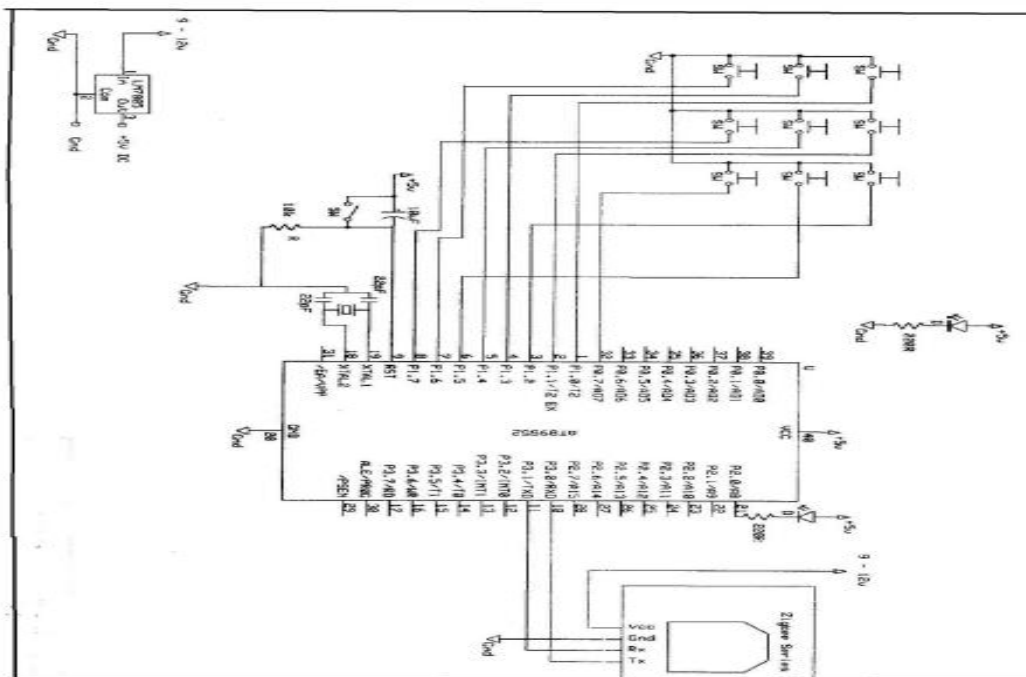


Fig-5: Remote Control Circuit

CONCLUSIONS

This paper demonstrates designing of embedded controlled sensor networks used for controlling the home devices as well as monitoring the environmental parameters. The features of GSM and Zigbee are explored to design the system for long distance as well as short distance. Embedded controlled sensor networks have proven themselves to be a reliable solution in providing remote control and sensing for indoor environmental monitoring systems.

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