REMOTE CONTROLLABLE AND ENERGY-SAVING ROOM ARCHITECTURE BASED ON ZIGBEE COMMUNICATION

ABSTRACT:

This paper proposes automatic detection of human and Energy saving room architecture to reduce standby power consumption and to make the room easily controllable with an IR remote control of a home appliance. To realize the proposed room architecture, we proposed and designed the Zigbee communication. Zigbee is a low-cost, low-power, wireless mesh networking. The low cost allows the technology to be widely deployed in wireless control and monitoring applications, the low power-usage allows longer life with smaller batteries, and the mesh networking provides high reliability and larger range. The proposed auto detection of human done using the IR sensor to indicate the entering or exit of the persons.

Microcontroller continuously monitors the infrared receiver. When any object pass through the IR receiver then the IR rays falling on the receiver are obstructed, this obstruction is sensed by the microcontroller (LPC2148-ARM7) also PIR sensor will check the presence of human beings with the help of radiations emitted by human beings. Then microcontroller will check the input coming from these two sensors and simultaneously if somebody is present then automatically checks for the light intensity and the temperature. And then if the room is found dark it switches ON the lights and if the temperature is more it switches ON the fans. And if nobody is present then all the lights will be switched off automatically.
BLOCK DIAGRAM:

TRANSMITTER SECTION:

ZIGBEE

IR RECEIVER

PIR SENSOR

Microcontroller

IR TRANSMITTER

LDR

TEMPRATURE sensor
RECEIVER SECTION

POWER SUPPLY:

1. Step down T/F
2. Bridge rectifier
3. Filter
4. Voltage regulator

Main power supply

RELAY

FAN

RELAY

BULB

RELAY

ZIGBEE

CONTROLLER
SOFTWARE:

- Embedded c
- Isp to burn the chip
- Keil compiler.
- Flash magic

HARDWARE:

- Microcontroller based our own developed board
- Power supply
- Zigbee tx module
- Zigbee rx module
- Max 232
- Tsop receiver
- Tsop transmitter
- Pir sensor

ADVANTAGES:

- Wireless controlled is easy
- More useful in remote areas
- Easily operated
- More power will be save

APPLICATIONS:

- Home automation
- Industrial automation