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Environment Monitoring and Device Control using ARM based Embedded Controlled Sensor Network

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***Abstract*— Embedded controlled detector network is that the technology need to implement environmental solutions.Many researchers have been making attempts to develop the embedded controlled sensor network. The present systems unit of activity huge, very pricey and arduous to need care of. The planned system is price effective and embedded systems within the planned system. ARM primarily based microcontroller and wireless sensors want to management the assorted devices and to watch the knowledge concerning the atmosphere exploitation zig bee.**

***Index Terms*— Embedded controlled sensor networks, Environment monitoring system,zigbee**

I. INTRODUCTION

Embedded controlled sensing element networks (ECSN)are mainly designed to be application- specific so that the energy consumption is minimum as the battery-powered nodes demand life-time of several months or even a few years.
Zigbee is the name for a short-range,low-price, and low-data-rate wireless multi-hop networking technology.The obtainable technologies area unit Bluetooth, Wi-Fi, Wi-Max,wireless mobile Ad-hoc network (WMANET), UMB, wireless HART, Bluetooth and ZigBee Embedded sensing element networks square measure fashioned by human action.

II. METHODOLOGY

Environment observation and device management allows new level of comfort in homes and it can also manage the energy consumption efficiently which in turns promotes the saving.
Remote controlling of the devices offers many advantages to senior citizens and people with disabilities which helps them in being more autonomous and increasing quality of life. Researchers have worked on home automation and environmental monitoring system in the past but in the the existing systems value is high, size is difficult which they unit of measurement tough to stay up. The projected system is price effective and controlled by user friendly embedded systems.

III. BLOCK DIAGRAM

Fig a shows the complete block diagram of ARM based Monitoring system.

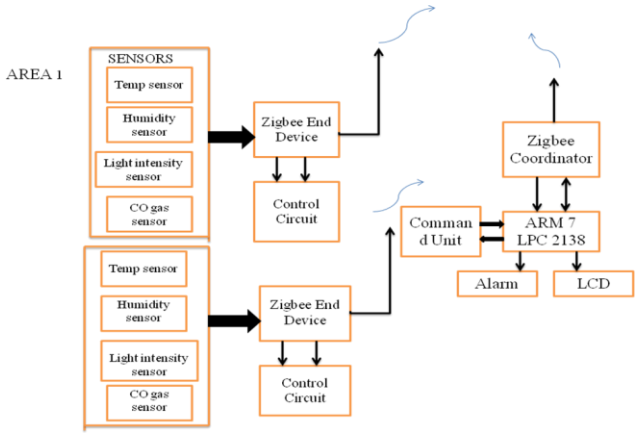


Fig a-Block diag of Monitoring system

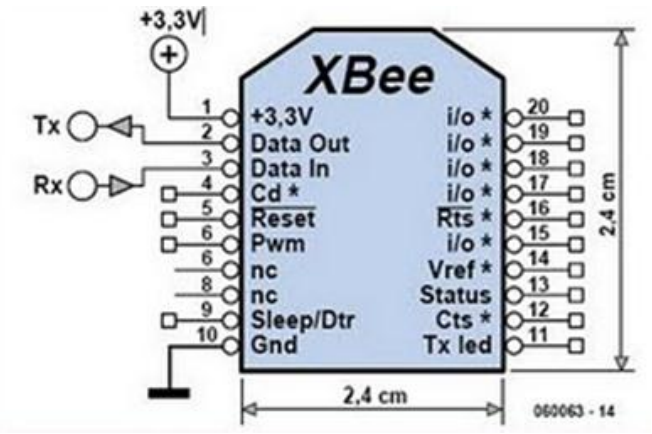
IV. Hardware Description

1. PIN DIAGRAM of Zigbee

2.

Pin #	Name	Direction	Description
1	VCC	-	Power supply
2	DOUT	Output	UART Data Out
3	DIN / CONFIG	Input	UART Data In
4	DO8*	Output	Digital Output 8
5	RESET	Input	Module Reset (reset pulse must be at least 200 ns)
6	PWM0 / RSSI	Output	PWM Output 0 / RX Signal Strength Indicator
7	PWM1	Output	PWM Output 1
8	[reserved]	-	Do not connect
9	DTR / SLEEP_RQ / DI8	Input	Pin Sleep Control Line or Digital Input 8
10	GND	-	Ground
11	AD4 / DIO4	Either	Analog Input 4 or Digital I/O 4
12	CTS / DIO7	Either	Clear-to-Send Flow Control or Digital I/O 7
13	ON / SLEEP	Output	Module Status Indicator
14	VREF	Input	Voltage Reference for A/D Inputs
15	Associate / AD5 / DIO5	Either	Associated Indicator, Analog Input 5 or Digital I/O 5
16	RTS / AD6 / DIO6	Either	Request-to-Send Flow Control, Analog Input 6 or Digital I/O 6
17	AD3 / DIO3	Either	Analog Input 3 or Digital I/O 3
18	AD2 / DIO2	Either	Analog Input 2 or Digital I/O 2
19	AD1 / DIO1	Either	Analog Input 1 or Digital I/O 1
20	AD0 / DIO0	Either	Analog Input 0 or Digital I/O 0

1. Pin details of Zigbee



2. Image of Zigbee

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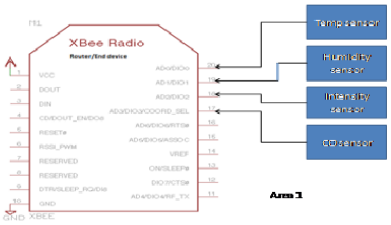
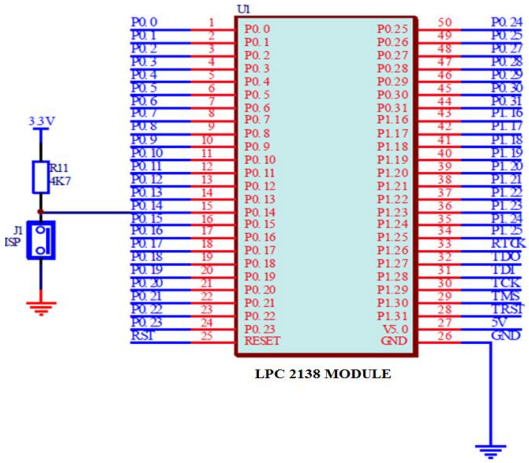
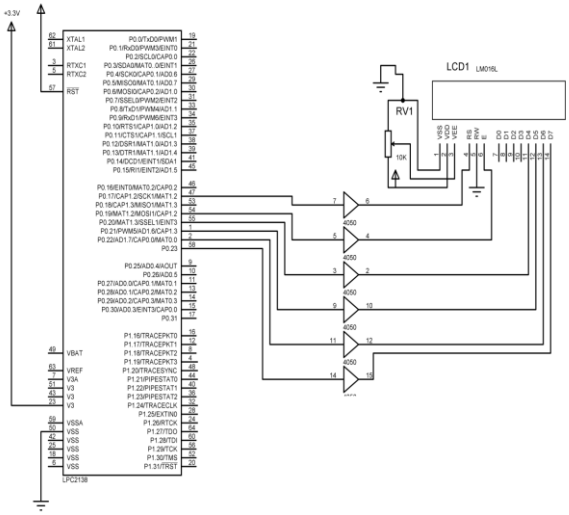
3. Circuit Diagram of End Zigbee



4. LPC 2138 MODULE



5. Interfacing LCD with controller



SENSORS USED

There are four different types of sensors used in our Monitoring System.

a) Temperature sensor (LM35)
b) Humidity sensor (AM1001)
c) Light intensity sensor (LDR)
d) CO gas sensor (MQ7)

V. SOFTWARE PART

KEIL uVISION 4

1 .Keil software is a compiler and debugger use to compile C code for microcontroller.

2. It compile code, assemble assembly source files, link and locate object modules and libraries, create HEX files, and debug your target program.

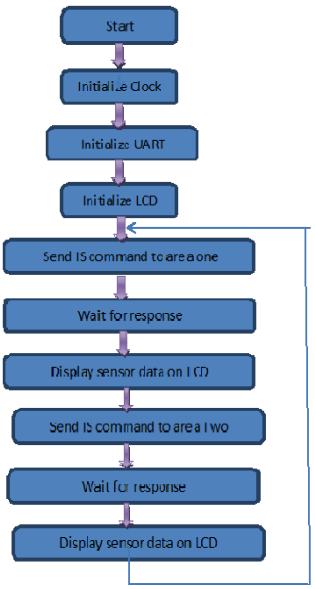
3. Keil is Project management, source code editing, and program debugging in one single, environment.

START PROJECT WITH A KEIL…

FLASH MAGIC

1. Flash magic is to download the hex file in the LPC2148 controller.
2. We have to select IC and set some parameter like crystal value.

VI. FLOWCHART



VI. RESULT

When we start our Monitoring System it displays-

Fig 1.project name display on LCD display

Following fig 2 shows -

Area 1- Intensity:212 l
It means intensity is in the specific range therfore LED will not glow.

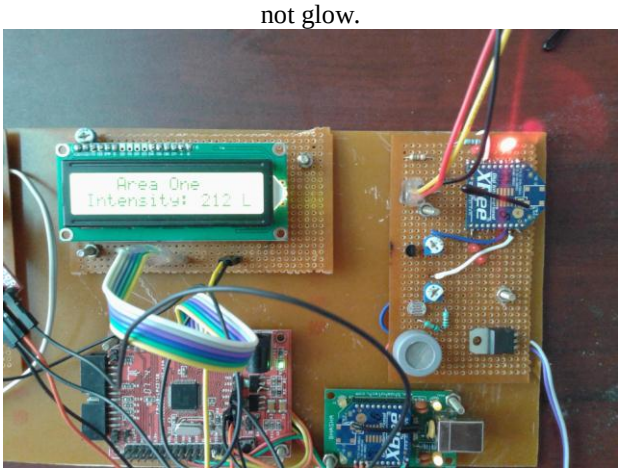


Fig 2

Area 1- CO gas:1789 ppm
It means CO is out of specific range therfore LED will glow.

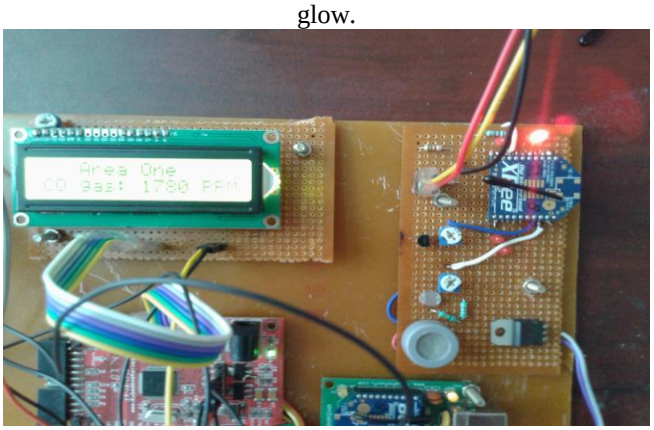


Fig-3
Glow LED is taken for CO gas.
This type of reading of Area 2 is also displayed on LCD display.

A. **Those LED which remains OFF when the system is operating then the LEDs are in Specified range**.

B. When sensors shows out of range values,we can connect relay to those sensors and cotrol it.

C. In this way,our Monitoring system works.

VII. CONCLUSION

This paper demonstrates planning of embedded controlled sensor networks used for dominant the house devices further as watching the environmental parameters. The options of Zigbee is explored to style the system for long distance as well as short distance .Embedded controlled sensor networks have tested themselves to be a reliable resolution in providing remote and sensing for indoor environmental monitoring systems. Four commercial sensors had been integrated with the system to monitor and compute the level of existence of temperature,humidity,light intensity and CO gas in atmosphere usmg information and communication technologies.

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