International Journal of Advanced Technology in Engineering and Science
Vol. No.4, Issue No. 05, May 2016
www.ijates.com
ijates
ISSN 2348 - 7550

SUPER MARKET CIRCUMSTANCES MONITERING AND CONTROLSYSTEM

Mudda Anil Kumar[1] , S.Vijayadheeswar Reddy[2]

[1] M.Tech Scholar (DECE), [2] Assistant Professor, Nalanda Institute of Technology(NIT), Siddharth Nagar, Kantepudi village, Satenepalli (Mandal), Guntur, AP, INDIA.

ABSTRACT

Currently In supermarkets the food in the market areas are damaged because of unbalanced environment conditions like temperature, humidity etc. If we want to keep food in fresh condition we must maintain balanced environment in market area for that we are implementing project like "Design and monitoring control system in super markets fresh areas based on ZIgBeeCommunication "At present days by developing this project we have chance to keep the food and items available in supermarket in fresh and good condition. This project can be developed by using ARM based controller or ARM 7 TDMI micro controller i.e. LPC 2148 micro controller. According to the standing that the majority of supermarkets can't effectively monitor the temperature and wetness around food of fresh area in our country presently, the thesis styles a hierarchical topology central watching system supported ZigBee wireless device network (WSN).In the system, the temperature and water content in air or Humidity of surveyed space may continuously monitored and controlled through relevant sensors and modules will collect and transfer temperature and water content in air or Humidity knowledge to the Management Centre, that displays and processes the data ,through the central node and also the RS-232 interface. If the collected knowledge exceeds the temperature reading then automatically turns on exhausted fan &starts the alarm system and also the control system; whereas the information is lower than the quality worth, control system may be automatically finish off, and this data may continuously monitors from one authorised P.C using Zigbee communication.

The another scope or feature of this project is count/ density calculation in Super market using IR sensors and displays on LCD screen as well as transmits and monitors the data on P.C

Keywords: ZigBee modules, ARM7 LPC 2148 micro controller, Proximity sensors, Humidity, exhaust fan.

I. INTRODUCTION

Generally, in markets crisp sustenance (Meat, fish, vegetables, organic product, and so forth) are put on the deal work area by spreading through air melding toward the end of the counter or topping with ice bunch on the counter. These methodologies may bring about crisp sustenance warmed at top side while cool on the base side, on the grounds that temperature and mugginess uneven. Because of uneven temperature and mugginess, sustenance turns sour effortlessly and reasons monetary misfortunes. To maintain a strategic distance from this super business sector staff needs to include ventilating or supplant ice bunch or splash fog every now and then.

Including ventilating or showering fog is controlled by the staff with experience, Because of the absence of viable observing framework. Temperature and stickiness parameters of new sustenance are tried by hand-hold instrumentation consistently. This procedure has low effectiveness, and is more troublesome to accomplish an ongoing programmed discovery and savvy control. This expands troubles of safeguarding for crisp sustenance and trouble of the staff's work. ZigBee innovation is a two-way remote system innovation. ZigBee is short separation, low intricacy, low power and low- taken a toll. It is created in view of IEEE 802.15.4 remote principles. ZigBee hubs development reach is 65536. ZigBee expends less power in light of the fact that it works in vitality sparing mode the two batteries supply vitality up to 1 eighteen months or something like that. The framework is comprised of hub modules which depend on high execution single chip CC2430 that incorporates ZigBee remote system innovation, and the cutting edge administration focus. The Administration Canter can screen temperature and mugginess of hubs situated in distinctive parts of the crisp sustenance territory by the execution of stage of Software and equipment. The proposed framework has a programmed caution and regulation framework. The host presentations cautioning data on the screen, quickly sends a notice guideline to the relating hub to drive the cautioning module to caution to ready business sector staff, If the identified information data surpasses the set limit (for an assortment of conservation condition, the limit may be set independently to diverse new sustenance. In the framework, the limit of temperature of crisp meat is set as 4ºC. It begins the regulation module and opens the solenoid valve to consequently modify temperature and moistness around the sustenance through aerating and cooling or water fog. The administration focus sends quit controlling guideline to the relating hub to close regulation module, While the temperature or dampness achieves the preset standard worth (in the framework, the temperature standard estimation of the meat is set to 0 ºC. with the goal that it accomplishes the motivation behind programmed location and keen control.

II. LITERATURE REVIEW

A Software Framework for Application Development using ZigBeeProtocol :The problem with the uptake of new technologies such as ZigBee is the lack of development environments that help in faster application software development. This paper describes a software framework for application development using ZigBee wireless protocol. The architecture is based on defining XML based design interfaces that represent the profiles of ZigBee nodes that are used in the application.

IEEE 802.15.4 is a proposed standard tending to the needs of low-rate remote individual range systems or LR-WPAN with an attention on empowering remote sensor systems. The standard is described by keeping up an abnormal state of effortlessness, taking into account minimal effort and low power executions. Its operational recurrence band incorporates the 2.4 GHz modern, investigative and therapeutic band giving about overall accessibility; moreover, this band is additionally utilized by other IEEE 802 remote norms. Conjunction among different gathered gadgets in the 2.4 GHz band is an imperative issue with a specific end goal to guarantee that every remote administration keeps up its sought execution necessities. This paper exhibits a brief specialized presentation of the IEEE 802.15.4 standard and breaks down the concurrence effect of an IEEE 802.15.4 system on the IEEE 802.11b gadgets.

III. HARDWARE DESIGN

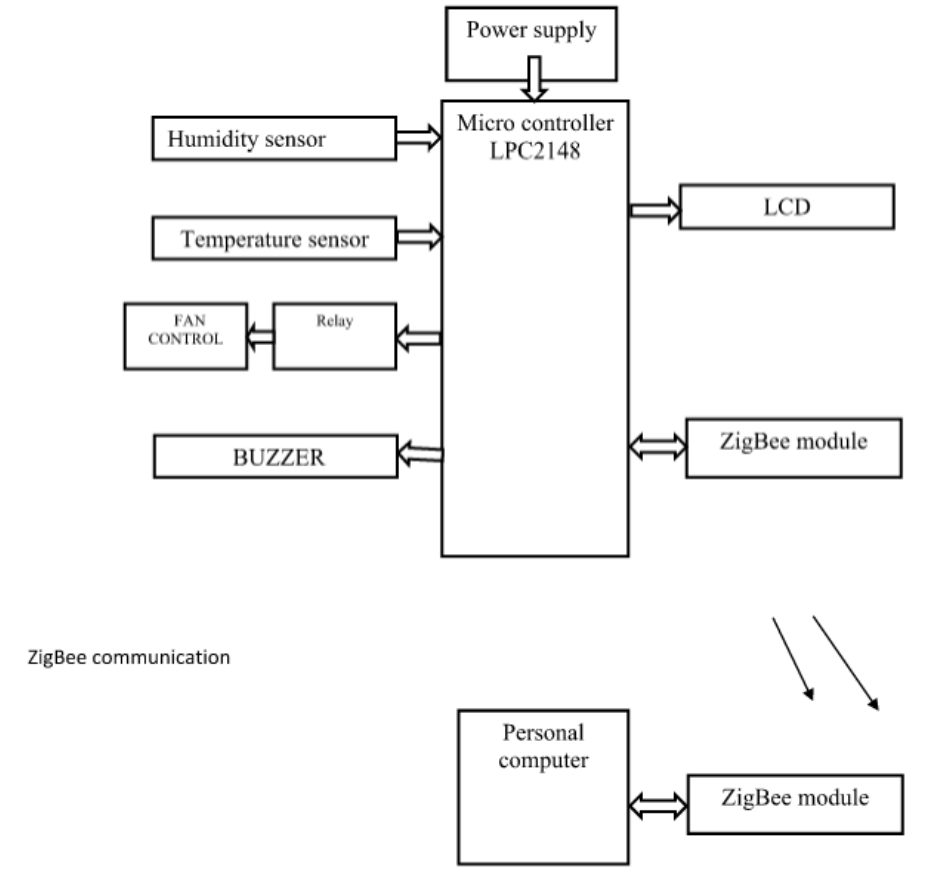

Fig1: Transmitter and Receiver block diagram

LPC 2148 micro controller:

The ARM construction modelling has turned into the most pervasive 32-bitarchitecture on the planet, with extensive variety of ICs accessible from different IC makers. ARM processors are installed in items going from cell/mobile phones to car stopping mechanisms. An overall group of ARM accomplice's and third-party sellers has created among semiconductor and item plan companies, including equipment engineers, framework architects, and programming designers. ARM7 is one of the broadly utilized miniaturized scale controller families as a part of inserted framework application. This segment is modest exertion for clarifying fundamental elements of ARM-7.ARM is a group of guideline set architectures for PC processors in view of a decreased direction set registering (RISC) structural engineering created by British organization ARM Holdings. A RISC-based PC configuration methodology means ARM processors require fundamentally less transistors than run of the mill processors in normal PCs. This methodology diminishes expenses, warmth and force use. These are alluring qualities for light, compact, battery-controlled gadgets—including cell phones, portable PCs, tablet and scratch pad PCs), and other implanted frameworks. A less difficult outline encourages more effective multi-centre CPUs and higher centre numbers at lower expense, giving higher preparing power and enhanced vitality proficiency for servers and supercomputer.

Fig 2: ARM LPC2148 microcontroller unit.

Humidity sensor:

Humidness is that the presence of water in air. The number of water vapour in air will have an effect on human comfort also as several producing processes in industries. The presence of vapour conjointly influences varied physical, chemical, and biological processes. Humidness activity in industries is crucial as a result of it's going to have an effect on the business price of the merchandise and also the health and safety of the personnel. Hence, humidness sensing is extremely vital, particularly within the management systems for industrial processes and human comfort.

Fig 3: Humidity Sensor Module

ZigBee Module:

ZigBee modules are conservative 802.15.4-based remote modules highlighting record-breaking extent, execution, and uncommon simplicity of joining. ZigBee likewise consolidate a complete FCC/CE/IC ensured RF plan that disposes of immoderate and tedious RF improvement, and gets your item to advertise on-time and on-spending plan. Join that with a preloaded boot loader, and accessible firmware supporting the IEEE 802.15.4 MAC, a Performance Analyser Application, the Light Weight Mesh systems administration stack, and with answers for both 2.4Ghz and SubHz, it's no big surprise that ZigBeeare utilized worldwide by framework integrators and OEMs to add remote network to their items for vitality productivity, lighting, building and home mechanization, and the sky is the limit from there.

Relay:

The principle operation of a transfer comes in spots where just a low-power sign can be utilized to control a circuit. It is additionally utilized as a part of spots where one and only flag can be utilized to control a great deal of circuits. The utilization of transfers began amid the creation of phones. They assumed a critical part in exchanging brings in phone trades. They were likewise utilized as a part of long separation telegraphy. They were utilized to switch the sign originating starting with one source then onto the next destination. After the

innovation of PCs they were additionally used to perform Boolean and other legitimate operations. The top of the line uses of transfers require high energy to be driven by electric engines et cetera. Such transfers are called contactors.

Fig 4: Relay

DC fan:

This force can originate from any DC voltage source, for example, a DC power supply or even batteries. In the case of utilizing batteries, so as to get 12V yield, you would need to place 8 "AA" batteries in arrangement. This is on account of every "AA" battery gives 1.5V. Being that in arrangement they include, 1.5V * 8= 12V. On the other hand, being that 8 batteries speak to a considerable measure of batteries, as a rule this won't be done, and a DC power supply will be utilized. So all we would need to do is take the DC power supply and change it with the goal that it gives out 12V yield or somewhat higher. At that point takes the tests of the DC power supply and interface them to the terminal wires of the fan. The positive terminal wire of the fan must match up with the positive terminal wire of the force supply. What's more, the negative terminal wire of the fan must match up with the negative terminal wire of the force supply. Extremity must be steady between the two.

Fig 5: DC fan.

Temperature sensor:

Temperature is the regularly measured natural amount. This may be normal since most physical, electronic, compound, mechanical, and natural frameworks are influenced by temperature. Certain synthetic responses, organic procedures, and even electronic circuits perform best inside of restricted temperature ranges. Temperature is a standout amongst the most regularly measured variables and it is consequently not amazing that there are numerous methods for detecting it. Temperature detecting should be possible either through direct contact with the warming source, or remotely, without direct contact with the source utilizing transmitted vitality. There are a wide assortment of temperature sensors available today, including Thermocouples, Resistance Temperature Detectors (RTDs), Thermistors, Infrared, and Semiconductor Sensors.

LM35 is an accuracy IC temperature sensor with its yield relative to the temperature (in 0 degree C). The sensor hardware is fixed and hence it is not subjected to oxidation and different procedures. With LM35, temperature

can be measured more precisely than with a thermistor. It likewise have low self-warming and does not bring about more than 0.1 degree C temperature ascend in still air. The working temperature extent is from - 55°C to 150°C. The yield voltage changes by 10mV in light of each oC rise/fall in surrounding temperature, i.e., its scale element is 0.01V/o

Fig 6: Temperature sensor

IV. SOFTWARE DESIGN

1) Keil
2) Flash magic

Compilers are projects used to change over a High Level Language to question code. Desktop compilers create a yield item code for the fundamental chip, however not for different microchips. I.E the projects written in one of the HLL like "C" will assemble the code to keep running on the framework for a specific processor like x86 (basic microchip in the PC). For instance compilers for Dos stage is not the same as the Compilers for Unix stage So if one needs to characterize a compiler then compiler is a project that makes an interpretation of source code into article code. The compiler gets its name from the way it works, taking a gander at the whole bit of source code and gathering and redesigning the guideline. See there is a touch little distinction in the middle of compiler and a mediator. Mediator just deciphers entire project at once while compiler breaks down and execute every line of source code in progression, without taking a gander at the whole program.

Flash Magic is an instrument which used to program hex code in EEPROM of small scale controller. It is a freeware instrument. It just backings the small scale controller of Philips and NXP. You can smolder a hex code into those controller which bolsters ISP (in framework programming) highlight.

V. WORKING DESCRIPTION

Here we are using LPC 2148 MICRO-controller. The LCD is connected to the PORT-1. We are using 8-bit LCD. So we used 8-data lines. The register select is connected to the P1.16 and enable is connected to P1.17. So whatever the data we want we can display it on LCD. Here we are interfacing different sensors like Temperature, Humidity to know the status of the environmental conditions and those are interfaces to controller in deferent pins. The Exhaust fan control is controlled through temperature sensor and fan control is connected through relay circuit for that we know about the status of the super market conditions Connections made sensors are for temperature monitoring purpose we are using DS1621 through I2C protocol in ARM LPC 2148 micro controller, Humidity is connected to P0.4, and fan control was connected through relay, and buzzer is connected to P0.7. And fan control is controlled through temperature read out in super market.Using all sensors

we are reading status on the sensor we are monitoring status of the environmental conditions and transmit same information to authorized PC using ZigBee communication. The Zigbee module is connected to UART0 in LPC 2148 micro controller using serial communication protocol.

VI. RESULTS

We are observed the results in this project by reading temperature values continuously from temperature sensor and compare the values from predefined values of temperature conditions of the room, if the temperature is heavy then automatically turned on exhaust fan control, if temperature values are low then automatically turned off, and display on LCD, Humidity is high it indicates, and this status can be read out by authentic person PC using ZigBee communication. And calculate density of persons using IR sensors and displayed on LCD.

Fig 7: ARM kit with sensors

Fig 8: Reading Temperature values

VII. CONCLUSION

Hence we conclude that the different sensors like Temperature, Humidity sensor will continuously read out information from super market status. Whenever any sensor detected that will sent from controller side to

Authorized PC using ZigBee communication, By reading temperature values from temperature sensor continuously we can control Exhaust fan control for perfect market conditions in super market and another conclusion is density calculation of the super market through IR sensors.

REFERENCES

[1] ZigBeeAlliance.ZigBeeSpecificationVersion1.0 [M]. ZigBee Standards Organization, 2004.

[2] Howit.Gutierrez J A. IEEE 802. 1 5. 4 low rate wireless personal area networks coexistence issues [J]. Wireless Communications and Networking, 2003, pp.: 1481-1486.

[3] Bastinb Tony Roy Savarimuthu Morgan Bruce Maryam Purvis A Software Framework for Application Development using ZigBeeProtocolThe Information Science Discussion Paper Series Number 2009/03 ISSN 1177-455X

[4] JiangYujian1 Zhou Xiaoping2 Study on Shelf Life of MAP Packaged Pork under Refrigerated Condition Food and Fermentation Industries 2003(Chinese)

[5] Boa Changchun Designed of Monitoring system for grain depot based on Zigbee technology Transactions of the CSAE vol .25 NO 9 Sep .2009(Chinese)

[6] Data Sheet for SHT11(v2.0),2003.http://www.sensirion.com

IX. AUTHOR DETAILS

Mudda.Anil Kumar, pursuing M.Tech (DECE) from Nalanda Institute of and Technology(NIT), Siddharth Nagar, Kantepudi village, Sattenapalli (Mandal), Guntur(Dist), AP, INDIA.

S.VIJAYADHEESWAR REDDY,Working as Assistant Professor from Nalanda Institute of Technology Siddharth Nagar, Kantepudi village, Sattenapalli(Mandal), Guntur(Dist), AP, INDIA.