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Wireless Sensor Monitoring System

Tushar C. Korade^{#1} Dr. Mrs. A. A. Shinde^{#2}

^{#1}Research Scholar, Department of Electronics Bharati Vidyapeeth Deemed University College of Engineering, Pune, Maharashtra, India

^{#2}Professor, Department of Electronics Bharati Vidyapeeth Deemed University College of Engineering, Pune, Maharashtra, India

Abstract - In today's demanding and competitive business environment, the need to collect, interpret and act on realtime data plays an increasingly vital role. But data collection using typical wired sensor networks has always been expensive to install and maintain, and limited in its reach. This difficulty can be overcome by using tiny, wireless smart sensors. This Wireless System is a monitoring device that combines a maser controller, one or more sensors, and a radio for transmitting and receiving information. A typical application scenario is scattering a hundred of sensors around a green house or a building or around a hospital to monitor temperature or humidity, track patient movements, or inform of disasters, such as earthquakes. In the military, they can perform as a remote sensor chip to track enemy movements, detect poisonous gas or radioactivity.

Keywords - Wireless sensor node, Greenhouse automation

I. INTRODUCTION

In the traditional system in the different green house plant it is found that the systems are not fully automated. In these systems the indicating of the different parameters are on the analog scale. Again the impotent parameter that must be considered is in the plant it is needed that for the particular plant the requirement of the water must be at the appropriate level for that yet the water management system is manual one due to which it may happen that less or more water.

Again it is necessary that the spraying of medicine should at the equal extend. But still the spraying of the medicine is by manual only. Also it found that workers can't easily check the status of the different fans which are used for the controlling the atmospheric conditions.

To do all the necessary work manually the large man power is necessary. Due to this the mistakes while doing the management may be happen which indirectly affect the quality of the product. Again problem will be arise when it is needed that to supply the water at the night time.

So it becomes clear that the traditional system is suffered from so many drawbacks.

II. WIRELESS SENSOR MONITORING SYSTEM A. Problem Statement

The present work aims at developing a software framework for sensing different sensor parameters. Processing them and send them wirelessly to the monitoring system. Also take the necessary control action.



Fig. 1 Block Diagram of Wireless Sensor Monitoring System

B. Objectives

The proposed project work is based on the below objectives

- 1. Development of software framework for sensing, displaying, transmitting and receiving different sensor parameters.
- 2. Development of application using above framework.
- 3. Validation of the application.

C. Scope

- The scope of the project is as follow:
 - 1. The scope of the project is limited to development of software framework only.
 - 2. The entire framework is developed using Keil compiler.

D. SY-HS-220

Calculation of percentage relative Humidity:

Calculations:

We have used 12 bit adc and our reference voltage is 5v. 5V corresponds to 4095 counts.

2.97 corresponds to how many counts?

Ans=2433

2433 count corresponds to 90 %Humidity Humidity=0.03699*Counts



SYHITECH



Fig. 2 SY-HS-220 Humidity sensor and its characteristic curve

E. LM35



The LM35 series are precision integrated-circuit temperature sensors, whose output voltage is linearly proportional to the Celsius (Centigrade) temperature. The LM35 thus has an advantage over linear temperature sensors calibrated in ° Kelvin, as the user is not required to subtract a large constant voltage from its output to obtain convenient Centigrade scaling. The LM35 does not require any external calibration or trimming to provide typical accuracies of $\pm 1/4^{\circ}$ C at room temperature and $\pm 3/4^{\circ}$ C over a full -55 to +150°C temperature range. Low cost is assured by trimming and calibration at the wafer level. The LM35's low output impedance, linear output, and precise inherent calibration make interfacing to readout or control circuitry especially easy. It can be used with single power supplies, or with plus and minus supplies. As it draws only 60 µA from its supply, it has very low self-heating, less than 0.1°C in still air. The LM35 is rated to operate over a -55° to +150°C temperature range, while the LM35C is rated for a -40° to +110°C range (-10° with improved accuracy).

Calculation of Temperature in degree Celcius: We have used 12 bit adc and our reference voltage is 5v. 5V corresponds to 4095 counts. 1.5V corresponds to how many counts? Ans = 1228 1228 count corresponds to 150 degree Celcius. Temperature =0.122*Counts

III. ALGORITHMS

ALGORITHM FOR TRANSMITTER SIDE:

Step 1: Start. Step 2: Initialize port and Display power on message on LCD. Step 3: Run ADC program for channel 1. Step 4: Display humidity on LCD and Run ADC program for channel 2. Step 5: Display temperature on LCD. Step 6: Check that humidity is greater than safe point If yes go to step 8. If no go to step 7. Else go to next step. Step 7: Start water sprinkling. Step 8: Stop water sprinkling. Step 9: Check that temperature is greater than safe point If yes go to step 11. If no go to step 10. Else go to next step. Step 10: Stop cooler. Step 11: Start cooler.

Step 12: Transmit data wirelessly to monitoring system.

Step 13: stop.

ALGORITHM FOR RECEIVER SIDE:

- Step 1: Start.
- Step 2: Receiver is polling control for data.
- Step 3: Is data received?
 - If yes go to next step.
 - Else go to next step2.
- Step 4: Received humidity and display the data.
- Step 5: Received temperature and display the data.
- Step 6: Set time for sampling reception.
 - If set go to next step.

If no go to step 6.

Step 7: stop

IV. RESULTS

TRANSMITTER SECTION:

Here we have considered to sensors, temperature and humidity. Results are displayed at two terminals,

Terminal 1: Humidity.

Terminal 2: Temperature

At transmitter section we have connected to sensors

Humidity and temperature. These two sensors records data and sends it to the receiver section.

In this particular example Humidity recorded is %RH: 67 and temperature is 28° C.



Fig. 3 Snapshot of Transmitter Section

RECEIVER SECTION:

At receiver section we are getting the results.



Fig. 4 Snapshot of Receiver Section

CONCLUSION

In this phase we have studied Design and Implementation of sensors in hardware. We have calibrated Humidity and temperature sensors according to characteristic curve. Also tested software and hardware parts got all the results as expected.

References

- Tushar C. Korade, A. A. Shinde. "STUDY OF WIRELESS SENSOR NETWORKS" International Journal of Electrical, Electronics and Data Communication, ISSN: 2320-2084 Volume-2, Issue-3, March-2014
- [2] Ajay V Deshmukh." *Microcontrollers [Theory and Applications]*, the McGraw-Hill Companies, 2nd Edition, Page no. 115 to 211 & 236 to 239.
- [3] M. Mancuso and F. Bustaffa, "A Wireless Sensors Network for Monitoring Environmental Variables in a Tomato Greenhouse," presented at 6th IEEE International Workshop on Factory Communication Systems in Torino, Italy, June 28-30, 2006.
- [4] H. Liu, Z. Meng and S. Cui, "A Wireless Sensor Network Prototype for Environmental Monitoring in Greenhouses," presented at Wireless Communications, Networking and Mobile Computing 2007 (WiCom 2007), International Conference on 21-25 Sept. 2007 Page(s): 2344 – 2347.
- [5] Sensinode (2007). NanoStack manual v1.0.1. [Online]. Available: www.sensinode.com.
- [6] Greenhouse guide. (Referred 20.04.2008). [Online]. Available: http://www.littlegreenhouse.com/guide.shtml.
- [7] G. Montenegro and N. Kushalnagar, "Transmission of IPv6 Packets over IEEE 802.15.4 Networks," Internet-Draft, IETF, Septemper 2007.[Online]. Available: http://www.ietf.org