
Weather Reporting System Using FPGA: A Review

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ABSTRACT

The measurement of temperature, relative humidity, rainfall, carbon contents by using the sensor is not only important in weather monitoring but also crucial for many other applications such as agriculture and industrial processes. A device for real time weather monitoring is presented in this paper to monitor the temperature and relative humidity of the atmosphere using analog and digital component.

The basic aim is to design a low power e circuit to be implemented byfield-programmable gate array (FPGA) chip for functionality verificationand performance evaluation.

A device for real time weather reporting is presented in this paper to report the real time temperature, relative humidity and carbon contains of the atmosphere using the FPGA chip.

In this paper, atmospheric parameters like Temperature, Humidity, rainfall and carbon contains in air, reporting is analyze and FPGA system is proposed.

Keywords

Temperature sensor; Humidity sensor; rainfall detector; carbonsensor ; FPGA

INTRODUCTION

Climate plays an important role in human life The unprecedented growth of industries and vehicular traffic have seriously affected the purity of clean air and environment. Certain atmospheric pollutants react with each other and produce other pollutants called secondary pollutants.

In our country some agricultural activities, industries, hospitals, storage places etc. require to measure the temperature and humidity for research, production, treatment and diagnosis of the patients, storing food, beverage etc. The advancement in technology has made these small and reliable electronic sensors capable of monitoring environmental parameters more favorable .

Combination of these sensors with FPGA system has proved to be a better approach for temperature, relative humidity and carbon contains in air. A low cost handy tool for weatherparameter sensing which is reliable and simple would be useful to design smart agricultural system.

This project is useful for farmers to know about the climate and according to the climate farmer can take decision about crop cultivation.

REVIEW

[1].In this paper, the LM35 sensor are used for measuring the temperature. The scale factor of this sensor is 01V/oC. The LM35 does not require any external calibration or trimming and maintains an accuracy of +/-

0.4°C at room temperature and +/- 0.8°C over a range of 0 °C to +100°C. By deploying sensor devices in the environment, we can bring the environment into real life.

[2]. In this paper, the ADC is used for the conversion of the analog signal into the proportional digital signal. The processor processes only digital signals so we have to give a digital input to the processor. But the FPGA controller has inbuilt ADC.

[3]. In this paper, the Signal Conditioning circuit is used for improving the quality of the sensor output. The signal from the sensor is given to the signal conditioning. The task of signal conditioning is to increase the amplitude of the input data. Mostly the OPAMP is used as signal conditioning.

[4]. In this paper, the weather system is implemented by using the sensor and the controller. Here the GSM is used for measuring the weather parameters.

[5]. The design is based on ARM 7 based LPC2378 microcontroller and EZ430RF 2480 ZigBee module to process and communicate the data effectively with low power consumption. Also, extensive studies were performed to reduce data packet loss and priority is given to power consumption and sensing efficiency, which is achieved by incorporating various smart tasking and power management protocols.

CONCLUSION

This is a simple and low cost weather monitoring system using sensors, LCD and FPGA system to monitor weather conditions of the desired location. These parameters can be measured by using different sensors. By using these parameters, improvement in the production rate of agriculture yield is possible. Temperature will decide the time duration to water the plant. Carbon dioxide will be helpful for fruit or chide. Relative humidity will decide what type of crop should be produced efficiently. FPGA system is used because it has low cost, power consumption and in system programmable less area required.

REFERENCES

- [1]. Bulipe Srinivas Rao, Prof. Dr. K. Srinivasa Rao, Mr. N. Ome Internet of Things (IOT) Based Weather Monitoring system International Journal of Advanced Research in Computer and Communication Engineering ISO 3297:2007 Certified Vol. 5, Issue 9, September 2016
- [2]. Weather Monitoring System using Microcontroller Karishma Patil¹, Mansi Mhatre², Rashmi Govilkar³, Shraddha Rokade⁴, Prof. Gaurav Gawas⁵ Dept. of Electronics & Telecommunication Engineering, # Shah & Anchor Kutchhi Polytechnic, Mumbai, India International Journal on Recent and Innovation Trends in Computing and Communication ISSN: 2321-8169 Volume: 4 Issue: 1 78 – 80 78 IJRITCC January 2016
- [3]. Raghu Vidap¹, Guruling Shahane Department of Electronic Science, Modern College of Arts, Science & Commerce, Shivajinagar, Pune, India Department of Electronics, D.B.F. Dayanand College of Arts and Science, Solapur, India DEVELOPMENT AND IMPLEMENTATION OF ARM MICROCONTROLLER BASED CO GAS MONITORING SYSTEM International Journal of Advances in Engineering & Technology, Oct., 2015. IJAET ISSN: 22311963
- [4]. MICROCONTROLLER BASED REAL TIME WEATHER MONITORING DEVICE WITH GSM K C Gouda¹, Preetham V R and M N Shanmukha Swamy International Journal of Science, Engineering and Technology Research (IJSETR), Volume 3, Issue 7, July 2014
- [5]. Y. Narasimha Murthy, V. Sukanya, C. Saritha Design and Development of ZigBee based Wireless Sensor Network for Monitoring Air Pollutants International Journal of Scientific & Engineering Research Volume 4, Issue 3, March-2013 1 ISSN 2229-5518