

Transferring the Health Details of Animal using Zigbee Module

POLEPALLI NAGA LAKSHMI¹, K. ASHOK KUMAR²

¹PG Scholar, Dept of ECE, PBR VITS, Kavali, AP, India.

²Assistant Professor, Dept of ECE, PBR VITS, Kavali, AP, India.

Abstract: In this paper present an animal health monitoring system (AHMS) for monitoring the physiological parameters such as rumination, body temperature, and heart rate with surrounding temperature and humidity has been developed. The developed system can also be analyzing the stress level corresponding to thermal humidity index (THI). The ZIGBEE device and Microcontroller are used in the implementation of sensor module. . It controls every component of the system. The LCD monitor displays the if the animal has been detected. The device is very helpful of inexpensive health care of livestock. A prototype model is developed and tested with high accuracy results.

Keywords: Sensors, Animal Health Monitoring, Animal Disease.

I. INTRODUCTION

The present patient screen frameworks in doctor's facilities permit ceaseless observing of patient fundamental signs, which require the sensors to be hardwired to adjacent, bedside screens or PCs, and basically bind the patient to his clinic bed. Indeed, even subsequent to associating these frameworks to a specific patient, a paramedical right hand need to constantly screen and note down all the crucial parameters of a given patient by monitoring the majority of his/her records physically. Receiving such a technique is blunder inclined and may prompt debacle on account of a human mistake. In the current proposed framework the patient wellbeing is persistently checked by the Mobile multi tolerant observing framework and the obtained information is transmitted to a brought together ARM server utilizing Wireless Sensor Networks. A ZigBee hub is associated with each patient screen framework that expends low power and is to a great degree little in measure. These are particularly intended for low power utilization, with insignificant circuit segments expected for little bundle, long separation go applications and ordinarily comprise of a low power processor with negligible assets and interface capacities. They additionally have a preservationist handset that is equipped for transmitting 8 bytes of information at once and has a direct transmitting scope of around 130 m. Hence, WPANs appear to be an ideal fit for remote patient observing. To enhance the precision and to expand the proficiency of the above procedures a continuous patient observing framework in light of Wireless Sensor Networks (utilizing IEEE 802.15a) and a unified ARM Server incorporated with GSM module is composed. This paper portrays a free framework that consequently logs essential parameters of patients for simple get to. The information is open to specialists through cell phone for accommodation if necessary.

II. INTRODUCTION ON ZIGBEE

ZigBee is an IEEE 802.15.4 standard for data communications with business and consumer devices [2]. It is designed around low-power consumption batteries with long battery life which last forever. The ZigBee standard provides network, security, and application support services operating which works on top of the IEEE 802.15.4 Medium Access Control (MAC) and Physical Layer (PHY) wireless standard. It works a set of technologies to enable scalable, self-organizing, self-healing networks that can manage various data traffic patterns. ZigBee is a low-cost, low-power, wireless mesh networking standard 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.

III. HARDWARE AND SOFTWARE DESCRIPTION

Hardware specification gives a specification of hardware details used to implement in the system.

A. PIC16F877A

This powerful (200 nanosecond instruction execution) which easy-to-program. CMOS FLASH-based 8-bit microcontroller is heart of system, which packs Microchip's powerful PIC architecture into an 40- or 44-pin package and is upwards compatible with the PIC16C5X, PIC12CXXX and PIC16C7X devices. The PIC16F877A features include 256 bytes of EEPROM data memory, self-programming, an ICD, 2 Comparators, 8 channels of 10-bit Analog-to-Digital (A/D) converter, two capture/compare/PWM functions, the synchronous serial port can be configured as either 3-wire. The other parts are Serial Peripheral Interface (SPI™) or the 2-wire Inter-Integrated Circuit (I²C™) bus and a Universal Asynchronous Receiver Transmitter (USART). All of these

features make it ideal for more advanced level A/D applications in automotive, industrial, appliances and consumer applications.

B. Temperature Sensor

LM35 temperature sensor IC. Its precision with its output proportional to the temperature (in °C). The sensor circuitry is sealed so it is not subjected to oxidation. With LM35, temperature can be measured more accurately and precisely than with a thermistor doing so. It also possess low self heating and does not cause more than 0.1 °C temperature rise in air. The operating temperature range between -55°C to 150°C. The output voltage varies by 10mV in response to every °C rise/fall in ambient temperature, i.e., its scale factor is 0.01V/ °C.

C. Humidity Sensor

Humidity Sensor features a temperature & humidity sensor complex with a calibrated digital signal output. By using the exclusive digital-signal-acquisition technique and temperature & humidity sensing technology, it ensures high reliability and excellent long-term stability. This sensor includes a resistive-type humidity measurement component and an NTC temperature measurement component, and connects to a high-performance 8-bit microcontroller, offering excellent quality, fast response, anti-interference ability and cost-effectiveness. Each DHT11 element is strictly calibrated in the laboratory that is extremely accurate on humidity calibration. The calibration coefficients are stored as programs in the OTP memory, which are used by the sensor’s internal signal detecting process. The single-wire serial interface makes system integration quick and easy. Its small size, low power consumption and up-to-20 meter signal transmission making it the best choice for various applications, including those most demanding ones. The component is 4-pin single row pin package.

D. Heart Rate Sensor

Heart rate is a very vital health parameter that is directly related to the soundness of the human cardiovascular system. This project describes a technique of measuring the heart rate through a fingertip using a PIC microcontroller. While the heart is beating, it is actually pumping blood throughout the body, and that makes the blood volume inside the finger artery to change too. This fluctuation of blood can be detected through an optical sensing mechanism placed around the fingertip. The signal can be amplified further for the microcontroller to count the rate of fluctuation, which is actually the heart rate.

IV. PROPOSED MODELLING

Each animal will have single unit of chip fixed behind their neck. The sensors are specifically temperature, humidity, remurattation. The signals are transmitted from Zigbee to to nearer cattle’s zigbee. So signal finally reached at LCD device.

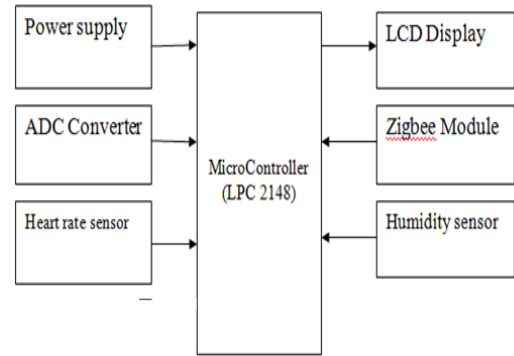


Fig 1. Block diagram

V. RESULTS AND DISCUSSION

In this project we explained how this look likes and how it works. The above pictures show the working condition of the model. The heart beat sensor and the temperature sensor interface with the armlpc2148 is shown in the first picture. In the second picture the measurements made by the different sensors is displayed using the LCD display and the above measurements are send to the other person who is monitoring from far away will receive this using the ZIGBEE module. Thus the project works successfully.

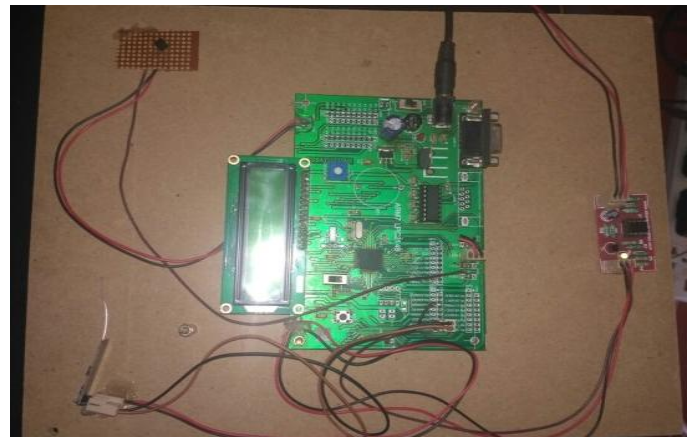


Fig 2. Image of the system before monitoring starts.

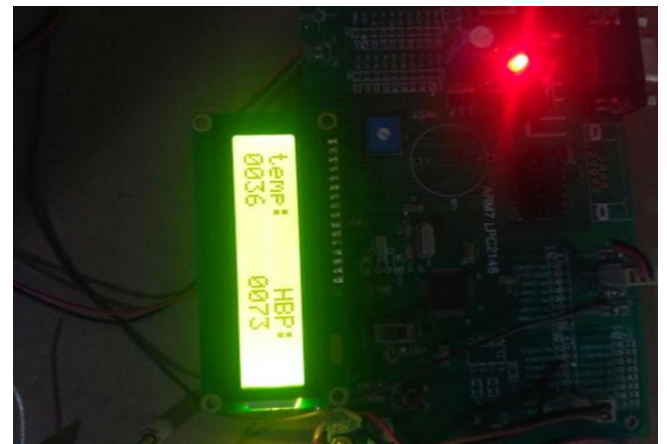


Fig 3. Showing the readings measured by the heart beat and the temperature sensors on LCD Display.

