

Natural Disaster Management System

Miss.Adsare Komal, Naykodi Ankita, Yendhe Tejashri

Abstract— This paper proposed solution for the natural disaster problem using ARM7controller. Natural Disaster is the worldwide phenomenon that causes loss of life and properties such as hurricanes and earthquake. By using vibration sensor, HZ 21 WA water flow sensor,HC-SR04 Ultrasonic module, Buzzer, Auto switching system this paper gives the solution .With the real flood information allows public safety organizations and other emergency manages to effectively plan their resources deployment within the limited time of alert.

Keyword: -ARM7, HC-SR04 Ultrasonic module, Buzzer, Vibration Sensor, HZ 21 WA Water Flow Sensor

I. INTRODUCTION

The main objective of the “Natural Disaster Management System” is saving the lives and properties in great extent by using alerting system. Byreadingthe water flow rateusing water flow sensor and also measure vibrations using vibration sensor. To achieve this ARM 7microcontroller is used.If only early flood warning system have been efficiently utilized, these victims can be reduced and suitable steps in struggle against the flooding situation can be taken in the shortest time.

II. BLOCK DIAGRAM

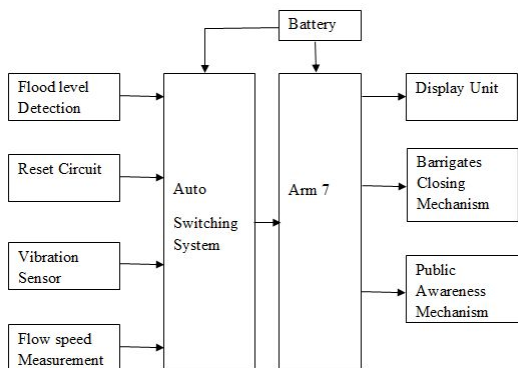


Fig.1 Block diagram of Natural Disaster Management System.

Fig.1 shows the Block diagram ofNatural Disaster Management system. The Water flow (flood level detection) sensor is used to detect the flood level and regarding output is given to auto switching system .likewise Vibration sensor is used to detect the vibrations. In this system we measure the water flow .auto switching system is used to sense the parameter automatically and give it to ARM7 block.ARM7Controller controls all input parameter and display it on the output part. LCD is used to display

various messages. We need to control the values of light thus we are going to used relay for these purpose.

A. Water Flow Sensor



Fig.2HZ 21WA Water Flow Sensor.

The HZ 21WAWater Flow Sensor operating at a 15 mA and flow pulse characteristics are[4.1Q]±10%.After water flows during the rotor part, attractive rotor rotating, plus speed beside with the flow of a linear vary. Hall elements output equivalent pulse signal reaction to the organizer, the extent of the stream of water by controller judgment, adjust proportional valve control of electric current

B. Ultrasonic Module



Fig.3 HC-SR04 Ultrasonic Module

Ultrasonic is the sound wave beyond the human ability of 20 KHz. Ultrasonic transmitter emitted an ultrasonic wave in one direction, and started timing when it is launched.Its DC operating voltage is 5V and operating at a currentof 15mA. And its operating frequency is 40 KHz.

C. Battery

Batteries store energy being produced by given generating source and when this source is unavailable this energy can be used by loads. The inclusion of storage in any energy generating system will increase the availability of the energy.

E.Liquid Crystal Display (LCD)



Fig.4 LCD Display

A liquid crystal display is a flat panel display, electronic visual display, or else video display that uses the brightness modulating properties of liquid crystals . LCs does not emit light directly. It is cooperative for displaying in sequence.

F. Arm7 Controller



Fig.5 Arm7 controller.

The LPC2148 microcontroller are based on a 32-bit ARM7TDMI-SCPU by real-time emulation and embedded trace maintain, that join the microcontroller through embedded high-speed flash memory ranging as of 32 kB to 512 kB. A128-bit wide memory interface and unique accelerator architecture enable 32-bit code implementation at the highest clock rate. Serial connections interfaces ranging starting a USB 2.0 Full-speed device, multiple UARTs, SPI, SSP to I2C-bus and on-chip SRAM of 8 kB up to 40 kB, create these strategy very well suitable for communication gateways and protocol converters, soft modems, voice acknowledgment and small end imaging, provided to equally huge buffer size plus high processing control

F.Vibration sensor

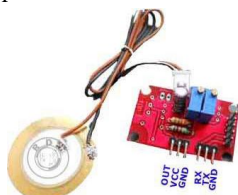


Fig.6Vibration Sensor

When vibration sensor recognizes movement or vibration, it sends a indication to also control panel developed a original kind of Omni-directional high sensitivity vibration detector by Omni-directional detection. Digital vibration sensing in the ADIS16220 starts with wide bandwidth MEMSaccelerometercore that provides a linear motion to electrical transducer function.

G. Relay

It is used to drive AC/DC Load & also used for auto switching purpose.

H.Buzzer



Fig.7 Buzzer

A buzzer or beeper is an audio signaling device, which might be mechanical, electromechanical or piezoelectric. Characteristic uses of buzzers plus beepers comprise alarm devices, timers.

CONCLUSION

This project described complexities, focusing on the application of river flooding, and examined a potential solution to the problem of river flooding. Through this experiment, the problem and solution have been elaborated and refined, with many lessons learned during the process.

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