MINI WIRELESS WEATHER STATION (PART 2)
(RECEIVING AND PROCESSING WEATHER DATA)

MOHAMAD AZAM BIN MANAF

30 APRIL 2007

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"I hereby declared that I have read through this report and found that it has comply the partial fulfillment for awarding the degree of Bachelor of Electrical Engineering (Industry Power)"

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Date : 30 APRIL 2007

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This project report adduced as meet half conditions bachelors degree award Electrical Engineering (Industry Power)

Fakulti Kejuruteraan Elektrik (FKE)
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APRIL 2007

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"I admit this report is from my own work except summary and quotation which each of them I'm telling the source"

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To father and mother,

sister, brother and younger siblings beloved

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ABSTRACT

The weather is one situation environment that keeps changing from day to day. As is known by the public, the weather influences the life and activity of a person. Weather can destruct someone's plan. Therefore it is important that are knows the weather forecast for the day.

This project is about building a small home, based on mini wireless weather station to help one in making simple weather forecast. The sensor will pack up temperature, humidity, pressure and the amount of rain water and deliver the data to PIC16F873 to be processed. Transmission of this data is via radio wave to a receiving station. This station will display the data in a friendly manner on a computer display system.

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ABSTRAK

Cuaca adalah satu keadaan persekitaran yang boleh berubah-ubah dari satu masa ke masa yang lain.Seperti yang diketahui umum,cuaca boleh mempengaruhi aktiviti kehidupan seseorang.Di mana suhu,kelembapan dan tekanan persekitaran yang stabil boleh membantu seseorang melakukan aktiviti harian dengan berkesan.satu lagi perkara penting yang berkait rapat dengan cuaca ialah jumlah air hujan yang turun. Oleh itu satu stesen cuaca mini tanpa wayar akan dibina.

Stesen cuaca mini tanpa wayar ini boleh mengesan suhu,kelembapan, tekanan dan jumlah isipadu air hujan. Pengesan-pengesan ini akan menghantar data ke PIC16F873 untuk diproses dari PIC data dan dihantar ke penghantar. Penghantaran data-data ini menggunakan sistem tanpa wayar(*wireless*), di mana ia dapat membolehkan stesen ini diletakkan di mana-mana yang sesuai dalam jarak yang telah ditetapkan.Konsep tanpa wayar ini adalah diaplikasikan dari teknologi hari ini yang semakin diguna secara meluas.Penerima akan menerima data yang dihantar kemudian akan memaparkan data keluaran pada skrin komputer.

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LIST OF SHORT FONT

LCD	=	Liquid crystal display
PC	=	Personal computer
PIC	=	Programmable Integrated Circuit
IC	=	Integrated Circuit
LED	=	Light Emitter Diode
PCB	=	Printed Circuit Board
RF	=	Radio Frequency
AF	=	Audio Frequency
ASH	=	Amplifier sequenced hybrid
IDE	=	Integrated development environment
AM	=	Amplitude modulation
FM	=	Frequency modulation
DAB	=	Digital Audio broadcasting
DSP	=	Digital signal processing
ADC	=	Analogue to digital converter

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CHAPTER I

1.1 INTRODUCTION

Weather is thunderstorms, tropical depressions, tornados, blizzards, squall lines, stationary fronts, cold fronts from Canadian, warm moist Gulf air, and hurricanes. The onset of any one of these events can be detected by monitoring a few basic conditions. Basically, weather cans influence day activities of the human with weather feature like temperature, humidity and pressure. One of the important in weather is raining.

As state on the television or the radio for the weather condition, it's always what conditions are like at the airport or some other remote location. But, what are conditions like in my backyard? To address this, the inventions have been made on the design of the mini wireless weather station. The mini wireless weather station can detect temperature, humidity, pressure and rain fall. After that the user can check the complete weather data from their own computer.

1.2 Aim

The aim of this project is to design and build mini wireless weather station using microcontroller PIC16F873 and conduct windows output on monitor computer using Visual Basic software.

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1.3 Objective

i. Built a system transmitter and receiver digital data for committed processing transmitting and receiving.
ii. Built the software using Visual Basic for display.

1.4 Scope

i. Learn the transmitting and receiving signal data for display process
ii. Learn and find components function in project and find any connection in all circuit
iii. Find step for built and testing program using PICDEV (PIC DEVELOPMENT BOARD)
iv. Find software MPLab®IDE for built program PIC16F873
v. Find the step for built and testing program using Visual Basic.

1.5 Problem statement

i. No flood warning system
ii. Need more cost to built weather station
iii. No weather change record in certain period
iv. Research area only covered at one pointed area

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CHAPTER II

LITERATURE REVIEW

2.1 Oregon Scientific WMR968 Wireless Weather Station

Figure 2.1 : Oregon Scientific WMR968 Wireless Weather Station

The Oregon Scientific WMR-968 Professional Wireless Weather Station is a sophisticated weather monitoring system designed to meet the needs of both amateur and professional weather enthusiasts. This state-of-the-art complete weather station comes equipped with outdoor sensors that operate on solar power, providing for easy

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installation. Indoors, the large display touch-screen console and separate baro-thermo-hygrometer rounds out the system. This station offers you flexibility and accuracy, all in one stylish and affordable package.This professional Weather Station is totally Wireless. Features Touch screen Desktop Control and solar powered remote precision sensors. Upgrade your station with Virtual Weather Station. Consistently rated the highest weather station software. Add a combination of 3 THGR-268, THC-268 or THWR288a Optional Sensors. Add Virtual Weather Station software and cable, the most popular choice for connecting your weather station to your computer and the Internet, and free Weather Exchange, the world's largest public network of weather station owners (requires Internet version to post data live). Purchase Virtual Weather Station now and save Virtual Weather Station is the most popular and complete solution available for connecting your weather station to your Personal Computer and the Internet. Runs on all Windows 32-bit operating systems, including Windows 95/98/NT/ME/2000/XP. Operates with most of the digital weather stations available from Ambient Weather.

2.1.1 Feature:

- **Console**

Features Touch screen Desktop Control with bright green HiGlo™ backlighting. The console is about 7" wide -- perfect for desktop or wall-mount use anywhere:

- ❖ Console Dimensions: 8 x 5.5 x 1.5in

- **Thermo-Hygrometer**

The Thermo-Hygrometer's operating range is –58°F to 158°F with resolution of 0.2°F; humidity range is 2% to 96%RH with an accuracy resolution of 1%. Updating occur every 37-second. The Thermo-Hygrometer is powered by a solar cell with battery backup.

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