

**AUTOMATIC METEOROLOGICAL OBSERVATION SYSTEM
(SOFTWARE DESIGN)**

**This is presented to fulfill the requirement of Advanced Diploma In Electrical
Engineering of MARA Institute of Technology**

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CONTENTS

Abstract	5
1 Automatic Meteorological Observation System	6
1.1 Introduction	6
1.2 Hardware Description	6
1.3 Sensing Devices	10
1.4 Signal Conditioning	19
1.5 Data Acquisition System	20
1.6 Software Development	22
2 Software design	25
2.1 Introduction	25
2.2 Approaches In Software Design	25
2.3 Graphical Notations	26
2.4 Graphical User's Interfaces (GUI)	26
3 Turbo C++ : Object Oriented Programming (OPP)	27
3.1 Introduction	27
3.2 What is OOP?	29
3.2.1 Information Hiding And Data Encapsulation	30
3.2.2 Inheritance	30
3.2.3 Polymorphism	31
3.3 Object-Oriented Programming Application	31
3.3.1 Multiple Data Structure	31
3.4 Using Turbo C++ Graphics	32
3.4.1 Introduction	32
3.4.2 Initializing The Adapter	32
3.4.3 Specifying Color	34
3.4.4 Printing Text On A Graphics Screen	35
3.4.5 Setting The Text Style	35
3.4.6 Drawing Graphics	36
3.5 What Makes C Unable To Produce Graphics Simulation	40
4 The X Window System	42

Abstract

Automatic Meteorological Observation System is a method to collect data for weather study. This system is developed based on sensing technique to be stored in data acquisition system and transmitted to central control unit which is PC based via telephone line. Measurements of the atmospheric structure functions is accomplished from atmospheric sensors situated on mini tower located at a remote area. The tower instrumentation system is microprocessor controlled which includes rain gauge, anemometer, albedometer, barometric pressure transmitter, humidity and temperature probe.

The requirement of a weather data acquisition system is the conversion of the physical variables from analog to digital parameter. The data is stored into RAM storage. The remote PC controlled is used for software development. Once the task has been programmed, the computer may execute the system to display the relevant data when required.

1 AUTOMATIC METEOROLOGICAL OBSERVATION SYSTEM

1.1 INTRODUCTION

Nowadays, information on updated weather is important to guide daily human activities. The requirement for an atmospheric experiment is thus, a means of measuring the relevant physical variables the atmosphere. Automatic Meteorological Observation System (AMOS) serves means to measure the necessary meteorological parameters to be processed, stored and displayed on the computer, whenever the data is required. AMOS is fully based on Data Acquisition System (DAS) operating with a remote control centre using telephone network.

DAS utilizes concepts of minimum hardware implementation with maximum software flexibility to accomodate any environmental changes. DAS is also used to acquire data from sensors output which is to be input and manipulated to the computer. The output of sensing instrument is analog in nature. So, in order for data to be collected for storage and processing, and interface system to computer environment is implemented.

System flexibility is attained by using the host computer to dynamically reprogrammed the distributed system; therefore, the logical architecture of the system can be quickly changed in order to meet new data acquisition or control requirement with no hardware amendment.

1.2 HARDWARE DISCRPTION

Figure 1 and 2 shows the overall discription of AMOS. The data which is collected from remote monitoring system is sent to a Central Control Unit (CCU) which is PC based via telephone link. It is in CCU where all the datas are processed and stored for further studies.

Starting from data measurements using sensing devices, the output signals are conditionalized and passed to signal selection at multiplexer. The signal are converted to digital format using Analog to Digital Converters (ADC) to be stored in RAM (temporary storage) before being accessed to CCU. Modem sytems are applied to transfer the signals (data) to CCU through telephone network.