USER FRIENDLY ELECTROCARDIOGRAPH

- HARDWARE DESIGN

Thesis is presented to fulfil the
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SYNOPSIS

Electrocardiograph is a medical instrument used to obtains and records the time-variant voltage produced by the myocardium during the cardiac cycle called electrocardiogram (ECG). It records the sequence of electrical activation of the atrias and ventricles of the heart and provides a mean for recognizing disturbances in the normal sequence.

Unfortunately, this important instrument is widely used only in the medical center as nobody else except doctors can analyze the heart rhythm waveform recorded by the instrument. On top of that, the development of electrocardiograph has led to a very complicated and fully computerized instrument being used nowadays which cost hundred thousands over dollars.

The objective of this project is to design the hardware of an electrocardiograph which is low in cost but with tolerable accuracy and can be used in conjunction with personal computers. The computer screen will displays the captured ECG of the subject under investigation.

The hardware design consists of two major parts; the sensor module and the analog to digital converter (ADC) module. The sensor module holds the transducer,

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1.0 INTRODUCTION

1.1 THE COMPUTER IN BIOMEDICAL INSTRUMENTATION

The development of the digital computer and the application of computer techniques to medicine and allied fields have ushered in a new era of progress in medical research and health care. In fact, it may be shown someday that no other single event will have had the impact on the practice of medicine that the computer has created.

Coupled with some of the more recent developments in biomedical instrumentation used in the medical center, the advent of the computer has placed a powerful new tool in the hands of the physician and medical researcher, one by which they can greatly expand their capabilities.

The major role of the biomedical instrumentation engineer in connection with the application of digital computer to biomedical instrumentation systems does not generally involve actual design of the computer hardware. Rather, in current environment where most people have their own personal computer, the engineer have to be primarily concerned with the interface of the computer with the instrumentation from which it is to receive data.