

HEARTBEAT MONITORING SYSTEM

This thesis is presented in partial fulfillment for the award of the Bachelor of
Electrical Engineering (Hons).

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ABSTRACT

Our heart normally beats in a regular rhythm and rate that is just right for the work our body is doing at any moment. The heart is a pump made up by four chambers: two upper chambers (atria) and two lower chambers (ventricles). It is powered by an electrical system that puts out pulses in a regular rhythm. These pulses keep the heart pumping and keep blood flowing to the lung and body. This project is developed to monitor the heartbeat by using optically heartbeat sensor and LABVIEW software as a programming language that been interfaced through the computer via ADC-16 High Resolution Data Logger. One handy optical technique exploits the fact that tiny subcutaneous blood vessels (capillaries) in any patch of skin furnished with a good blood supply, alternately expand and contract in time with the heartbeat. An ordinary infrared LED/photocell pair can sense this rhythmic change as small but detectable variations in skins contrast.

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CHAPTER 1

INTRODUCTION

1.1 Introduction of the Project

Our heart normally beats in a regular rhythm and rate that is just right for the work our body is doing at any moment. Usually it is calculated as the number of contractions (heart beats) of the heart in one minute and expressed as "beats per minute" (BPM) [1]. When resting, the adult human heart beats at about 70 BPM (males) and 75 BPM (females), but this rate varies between people. But children have naturally higher normal heart rates than adults [2].

This project is developed to monitor the heartbeat by using optically heartbeat sensor and LabVIEW software as a programming language that been interfaced through the computer via ADC-16 High Resolution Data Logger. One handy optical technique exploits the fact that tiny subcutaneous blood vessels (capillaries) in any patch of skin furnished with a good blood supply, alternately expand and contract in time with the heartbeat. An ordinary infrared LED/photocell pair can sense this rhythmic change as small but detectable variations in skins contrast.

This project consists of hardware and software development. Both will be implemented to the heartbeat monitoring system. The figure 1 below shows the block diagram of the system and its major subsections.

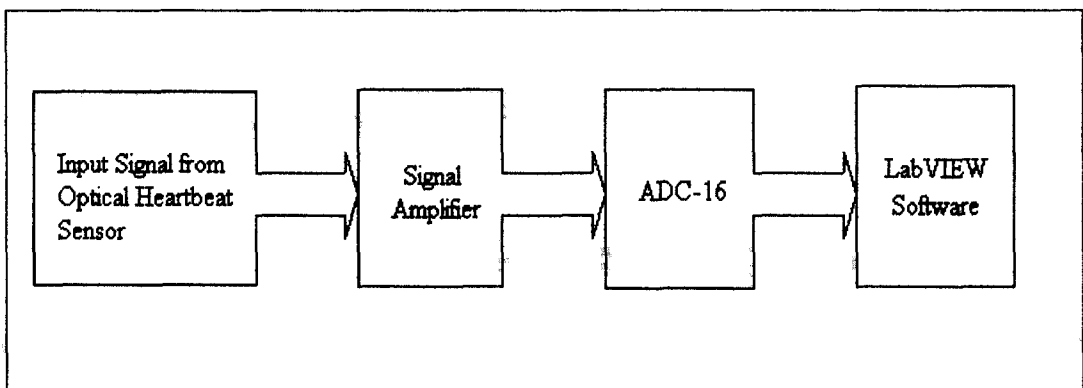


Figure 1.1: Block Diagram (Overall System)