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AUTOMATED ANESTHESIA DELIVERY SYSTEM USING TEMPERATURE SENSORS

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Abstract

An embedded system is a special- purpose computer system designed to perform a dedicated function. Unlike a general purpose-computer, Such as a personal computer, an embedded system performs one or a few pre-defined tasks, usually with very specific requirements. Since the system is dedicated to specific tasks, design engineers can optimize it, reducing the size and cost of the product. Embedded system comprises of both hardware and software. Embedded technology uses PC or a controller to do the specified task and the programming is done using assembly language programming or embedded C. This Paper "Automated Anesthesia delivery Systems using Temperature sensors" will control drug injection speed depending upon the patient's state. Our temperature sensor will sense the temperature and gives corresponding analog voltage to signal conditioning, signal conditioning circuit will give the binary value to the microcontroller, depending upon the binary value given to the controller, it will drive the motor. Syringe Placed in motor will inject the drug to patient based on the patient's condition.

1. Introduction

An embedded system is a special purpose computer system designed to perform a dedicated function unlike a general purpose computer such as a personnel computer, an embedded system performs one or a few pre-defined tasks usually with very specific requirements. Modern embedded digital world is innovating the entire domain like automobiles industrial automation, RFID, energy meter and specially Biomedical[1]. This paper "Automatic Anesthesia Controlling System" will control drug injection speed depending upon the patient's state.

2. Materials and Methods

The hardware requirements of the project are microcontroller [ATMEL89C51], Motor Driver. The software requirements involved are Kiel Computer, flash downloader, etc.

3.   Result and Discussion

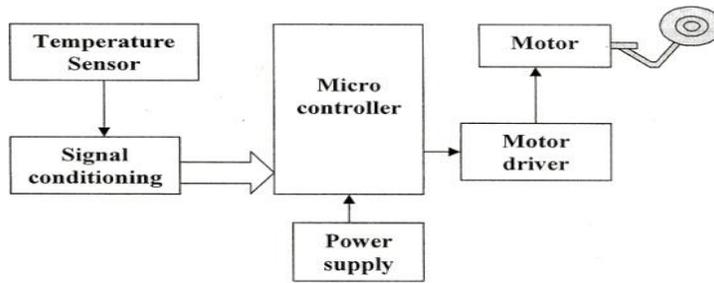The working of the anesthesia machine depicted as below in Fig.1
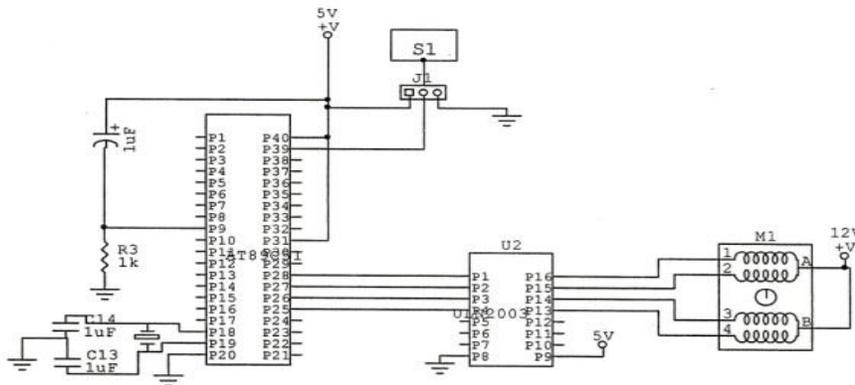

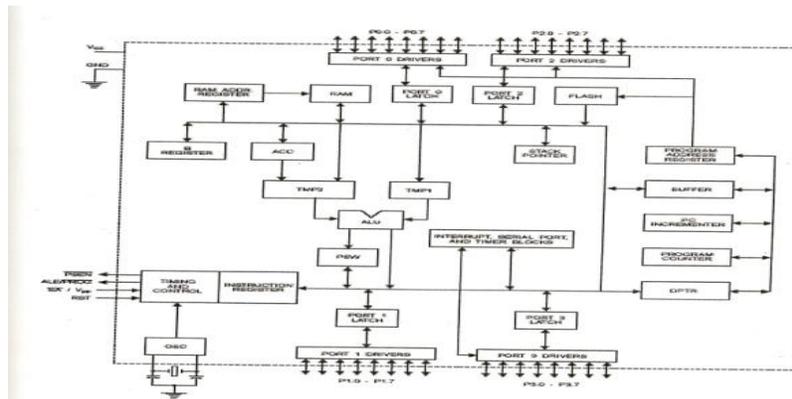**Fig.1 Block Diagram.**

Fig.2 Circuit Design.

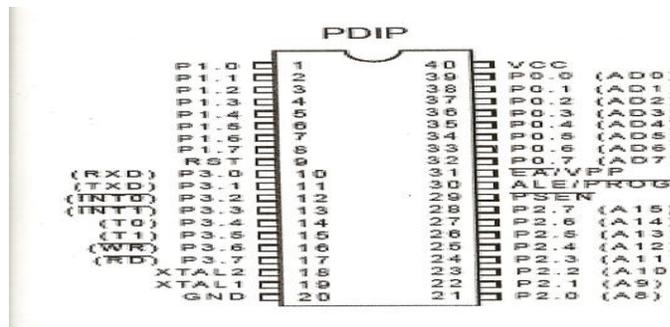**Fig.3 Microcontroller-ATMEL (89C51).**

Fig. 4 Pin Diagram.

The system automatically gives the required normal dose for the patient and there is no chance of failure as the dosage level is already fed to the controller. There are normally three body temperature levels, the first in lower level which varies from 37-40^{0}C.It works without noise and gives positive result[2]. The second in medium level which varies from 40 – 47^{0}C.It works with chirping noise and jerks. The result is positive[3]. The third is higher level which is 47^{0}C and above. It works with same old configuration and the result obtained is negative.

4. Conclusion

This Paper (AUTOMATED ANESTHESIA DELIVERY SYSTEM) is strictly meant for temperatures ranging between (34-47^{0}C) i.e. for normal body temperatures (STP). We have designed the system to reduce the workload of doctors during operations. Similarly there is no chance of over dosage of anesthesia to the patient which proves lethal sometimes. Our system will automatically give the required normal dose to the patient and there is no chance of its failure as the dosage level to be given to the patient is already fed in the controller.

There are actually three body temperature levels i.e.

37-40^{0}C -LOWER LEVEL

40-47^{0}C - MEDIUM LEVEL

Above 47^{0}C -HIGHER LEVEL

Thus this paper is only meant for lower and medium body temperatures.

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