

CONTENTS

Acknowledgement	(i)
Abstract	(ii)
CHAPTER 1 : INTRODUCTION	1
CHAPTER 2 : FUNCTIONAL DESCRIPTION	3
2.1 : The Speaking Clock	4
2.2 : Memory Map	5
2.3 : Speech Generation	9
2.4 : Time Function	10
2.5 : Address Decoding	14
CHAPTER 3 : SYSTEM COMPONENTS	15
3.1 : Introduction	16
3.2 : A 6802 Microprocessor	16
3.3 : A 2716 EPROM	19
3.4 : A 6821 PIA	20
3.5 : An ICM7170 Real-time Clock	22
3.6 : A 7805 Regulator	23
3.7 : A LM386	23
3.8 : Low Pass Filter	24
3.9 : Bridge Rectifier	25
3.10: Transformer	27
3.11: Power Supply	28
CHAPTER 4 : CONSTRUCTION	29
Construction	30 - 32

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Abstract

This speaking clock project is formed by a simple microprocessor controller system. The system is used to process data from the real time clock.

A computer is a device to process data automatically. Processing consists of storing data in memory, performing logical operation and taking decisions based on a data. Some computer are used to operate such devices as video recorder or clocks.

Most of the actual work is done by the central processing unit (CPU). The CPU consists of a single integrated circuit; a microprocessor. This is driven by an astable circuit.

This project describes how the allophone speech system can be used to produced a speaking clock which may be invaluable to a blind person or simply a novelty clock demonstrating the use of current electronic devices.

The majority of the SP0256AL speech synthesiser have been used with this project.

Chapter 1 : Introduction

The speaking clock uses a 6802 microprocessor, 2716 EPROM, 6821 PIA and an ICM7170 real time clock. The system forms a simple microprocessor controller which is used to process data from the real time clock. The heart of the system is the program stored in the ROM.

The EPROM occupies locations 8000H to 87FFH (2K byte). The real time clock sits at location 2000H. This project uses a small amount of RAM for data storage and as a stack for holding return addresses when jumping to subroutines. This RAM is contained within the 6802 at location 0000H to 007FH (128 bytes).

Words are generated by stringing together allophones which make up the basic sounds as speech. The speed or pitch at which it speaks is governed by crystal. The output from speech synthesiser is pulse width modulation and this is removed by a low pass filter. The resulting audio is then amplified by a small power amplifier to drive a loudspeaker.