

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING COURSE

DIPLOMA PROJECT

**DEVELOPMENT OF A COMPUTER MULTIPURPOSE
INTERFACE CARD**

by

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**DEVELOPMENT OF A COMPUTER
MULTIPURPOSE INTERFACE CARD**

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CONTENTS

INTRODUCTION

CHAPTER 1 BLOCK DIAGRAM

1.1 General	1
1.2 Block diagram explanation	2

CHAPTER 2 INTERFACING TO THE IBM PC

2.1 Introduction	3
2.2 IBM PC system bus	3
2.3 The 8255 Programmable Peripheral Interface	6
2.4 Parallel I/O port design	9
2.5 PCB design	12
2.6 Testing	12

CHAPTER 3 ANALOG AND DIGITAL INTERFACE

3.1 General	14
3.2 Characteristics of ADC	14
3.3 A/D conversion techniques	17
3.3.1 Counter type	17
3.3.2 Dual slope	19
3.3.3 Successive approximation	19
3.3.4 Flash type	20
3.4 Characteristics of DAC	22
3.5 D/A conversion techniques	22
3.5.1 Binary weighted input DAC	22
3.5.2 The R/2R ladder DAC	23
3.6 Design of the analog input and digital output interface circuit	24
3.6.1 The ADC RS427	25
3.6.2 The DAC ZN425E	26

3.6.3 Design of the circuit	27
3.7 PCB design	30
3.8 Testing	30
3.9 Conclusions	30
CHAPTER 4 STEPPER MOTOR INTERFACE	
4.1 General	31
4.2 Interfacing a stepper motor	31
4.3 Design of the circuit	33
4.4 PCB design	35
4.5 Testing	35
4.6 Conclusions	35
CHAPTER 5 APPLICATIONS	
5.1 General	36
5.2 Conclusions	37
CHAPTER 6 SOFTWARE	
6.1 General	38
6.2 Stepper motor control	38
6.3 D/A converter application	39
6.4.1 Listing of "PROJECT 1" program	39
6.4.2 Listing of "PROJECT 2" program	47
CONCLUSIONS	
APPENDIX A	
DATA SHEETS	

INTRODUCTION

This project presents hardware and software design for the development of a computer multipurpose interface card. The aim of this project is to enable the IBM PC to drive electronic devices located outside the PC or receive information from devices for data manipulation. Also a combination of this two is possible making the PC capable of reading certain information manipulating the data and driving certain output devices.

The computer is capable of understanding only digital signals 8-bit 16-bit etc. The IBM PC can understand only 8-bit signals as all the external signals are 8-bit while the processor instructions are 16-bit.

To interface to the IBM PC system bus an input output I/O card was designed and constructed providing 16 lines for I/O use. These 16 lines are divided into two 8-bit ports. Each port is controlled by software and can be used as an input or an output port. These two ports occupy a certain address in the memory of the PC. The IBM PC provides specific area for the use of a prototype card having available 32 port addresses from the address 0300H to 031FH. All the signals at the IBM PC system slot are explained.

A great number of applications can be operated with the constructed interface card. In this project a stepper motor and a digital to analogue converter were used as output devices. An analogue to digital converter and an 8-way switch were used as input devices. A number of Analogue to Digital and Digital to Analogue converting methods are explained. The characteristics and functions of each IC used are explained. Static and dynamic testing was done for all circuits. For the stepper motor and the Digital to Analogue Converter, software was developed using the Turbo Pascal to provide for the stepper motor different movements and for the Digital to Analogue Converter three different waveforms.