

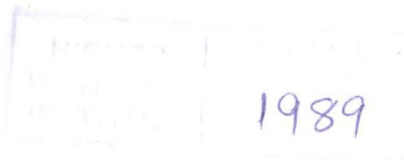
HIGHER TECHNICAL INTITUTE
ACAD. YEAR 1991-1992
ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT
INTERFACING SENSORS
TO THE IBM PC

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INTRODUCTION

This project present hardware and software design for interfacing a variety of sensors to the IBM PC. The aim of this project is to enable the IBM PC to read physical quantities. Also some output devices are attached. So the PC it analyze the information which take from the input sensors and drive accordingly the output devices.

Many sensors provide analog voltage levels. The computer can understand only digital signals, 8-bit, 16-bit, 32-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. An Analog to Digital Converter, ADC, was used to perform the change of the analog voltage to digital signal.

To interface to the IBM PC system bus an Input Output, I/O, card was design and constructed providing 24 lines for I/O use. These two 8-bits and two 4-bit ports are occupy a certain address in the memory of the PC. Each one of the four ports can be controlled by software and can be either input or output port. Also the ports can set to work in handshaking mode by software. All signals at the IBM PC system slot are explained.

Temperature, optical, displacement and other sensors were used as input sensors. The TRIAC with zero voltage switching action, the stepper motor, the DC motor, the relay and other devices were used for output purpose.

By making combinations of the input sensors and output devices different applications were achieved. 1) The control of the power of a heater in accordance to the temperature of the room and the temperature outside the room that the heater is installed. 2) The illumination of an incandescent lamp was regulated by adjusting the power of the lamp. This project can also be used as DATA acquisition system.

The software was developed in TURBO PASCAL language using ready made units and pascal objects, in Object Oriented Programming, OOP. The program is friendly user and uses the graphic mode for displaying graphs.

CONTENTS

CHAPTER 1 A COMPUTER SYSTEM

1.1 General	2
1.2 Central Processing Unit.....	2
1.3 Memory	4
1.4 Peripherals	6
1.5 Software	7

CHAPTER 2 INTERFACING TO THE IBM PC

2.1 Introduction	1
2.2 The IBM PC system slot	1
2.3 The 8255 PPI	14
2.4 Parallel I/O ports design	18
2.5 PCB design	22
2.6 Testing	23

CHAPTER 3 ANALOG INPUT INTERFACE

3.1 General	26
3.2 Characteristics of ADC	26
3.3 Signals of ADC	30
3.4 ADC Conversion technic's	31
3.4.1 Counter type	32
3.4.2 Dual slope ADC	33
3.4.3 Voltage to Frequency Converter type	35
3.4.4 Successive approximation technic	37
3.4.5 Flush type ADC	39
3.4.6 Shaft encoder type	40
3.5 Design of the Analog input interfacing card ...	41
3.5.1 The ADC0804	42
3.5.2 Analog multiplexing	44
3.5.3 Design of the circuit	45
3.6 Testing	48
3.7 Conclusions	50

APPENDIX

CHAPTER 4 INTERFACING SENSORS

4.1 Transducer and sensors 52
4.2 Characteristics of a measurement system 52
 4.2.1 Dynamic performance 53
 4.2.2 Static performance 54
4.3 Temperature sensors 55
 4.3.1 Platinum resistance 55
 4.3.2 Thermocouples 56
 4.3.3 Thermistors 58
 4.3.4 Temperature measurement system 58
4.4 Optical sensors 66
4.5 Displacement sensors 69
4.6 Conclusions 71

CHAPTER 5 INTERFACING OUTPUT DEVICES

5.1 General 74
5.2 Interfacing a stepper motor 74
5.3 Interfacing a DC motor 78
5.4 Relay control 80
5.5 TRIAC control 81
5.6 Conclusions 85

CHAPTER 6 APPLICATIONS

6.1 General 88
6.2 Temperature control 88
6.3 Illumination indication system 90

CHAPTER 7 SOFTWARE

7.1 General 93
7.2 Analysis 93
7.3 Listing 100

APPENDIX A

DATA SHEETS