

Laporan Projek Tahun Akhir
Kursus Diploma Lanjutan Kejuruteraan Elektronik
Kajian Kejuruteraan ITM Shah Alam

Data Acquisition System

By:

Abd. Wahab Bin Husin

Omar Bin Ahmad

Mei 1986

TABLE OF CONTENTS

Preface	i
Acknowledgement	ii
CHAPTER 1: PROJECT REVIEW	
1.1 Introduction	2
1.2 Specification of DAS	3
1.3 System operation	4
CHAPTER 2: THEORY	
2.1 Current to voltage converter	7
2.2 Instrument amplifier	8
2.3 Comparator	10
2.4 Notch filter	15
2.5 Peak detector	17
2.6 Sample and Hold	19
2.7 Analog to Digital Converter	24
CHAPTER 3: HARDWARE AND SOFTWARE DESIGN	
3.1 Circuit and Flow chart Description	29
3.2 Power Supply	36

CHAPTER 4:	REVIEW OF APPLE 11 FOR COLLECTING AND DISPLAY OF DATA	
4.1	Basic Interface Concepts	38
4.2	Collecting and Displaying Data	40
4.3	Software POKE and PEEK	42
CHAPTER 5:	THE CONCLUDING CHAPTER	
5.1	Discussion	45
5.2	Conclusion	46
APPENDIX A:	Signal Discription of APPLE 11 Microcomputer (Datamini personal computer)	47
APPENDIX B:	The Program Listing	51
APPENDIX C:	Sample of Output Listing	58
APPENDIX D:	Data sheets	62
APPENDIX E:	Component Theory - A Review	100
REFERENCES		116

PREFACE

The project was the brainchild of En. Ahmad Fauzi Ibrahim. The authors designed their own hardware and software under strict supervision of the project supervisor. Some materials were adapted from relevant texts and numerous individuals were consulted.

The project is compatible to any microcomputer and in this case the APPLE II microcomputer (Datamini personal computer) plays the host.

The report is designed for readers with some knowledge of micro-computer and programming. However, certain basic principles of both subjects are reviewed.

The project system operation will be discussed in chapter one. The authors put it in simple words so that a layman can understand easily. Chapter two briefs the basic theory of the components used in the project. Chapter three and five contain the elaborate explanation of the hardware and software interface respectively. Chapter four gives a review on the microcomputer used in the project. Chapter six concludes the report with discussion and conclusion. The appendices contain data sheets of the component used in this project, the program listing and other useful data to make the user fully understand the project.

ACKNOWLEDGEMENT

We would like to express our gratitude and utmost appreciation to the project supervisor, En. Ahmad Fauzi Ibrahim who had given valuable assistance and encouragement in completing the project. Without his strenuous and time consuming efforts, the project would not come to a success.

We also like to express great indebtedness to lecturers, laboratory technicians and friends who had wittingly or unwittingly helped us in many ways. Its a pleasure to thank them for their constructive comments and criticism for improving the quality of the project.

Lot but not least, we would like to thank our classmates who have given us cooperation and understanding during the course of our study in Mara Institute of Technology.