

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DEVELOPMENT OF A CONTROL
SCHEME FOR A CD ROM DRIVE

E.1113

XENI XENIS

JUNE 1998

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by
XENIS XENI

PROJECT REPORT

SUBMITTED TO

**THE DEPARTMENT OF ELECTRICAL ENGINEERING
OF THE HIGHER TECHNICAL INSTITUTE
NICOSIA
CYPRUS**

**IN PARTIAL FULFILLMENT OF THE
REQUIREMENTS FOR THE DIPLOMA OF**

TECHNICIAN ENGINEER

IN

ELECTRICAL ENGINEERING

JUNE 1998

2848

I would like

Spyro, B.

Institute

project

My dad

Theodore

Wynne

Wynne

To my parents

ACKNOWLEDGMENTS

I would like to express my sincere thanks to my project supervisor Mr. Spyros Spyrou, Senior Lecturer of the Electrical Department at the Higher Technical Institute, for his guidance, advise and support during the whole period of the project.

My thanks and deep appreciation to the managers of Sprell Ltd, Mr. Stelios Theodorou and Mr. Michalis Souropetsis for their help and support, despite any inconvenience that this project might have caused them.

Xenis Xeni

SUMMARY

Author : **Xenis Xeni**

Project Title : **Development of a control scheme for a CD ROM drive.**

Audio CD Players are becoming a big part of everybody's life nowadays. Their price ranges from 100 to a few thousand pounds. An **inexpensive and portable** audio CD player can be developed using a PC's CD ROM. A problem that arises when using a CD ROM for the listening of audio CDs only is that there is a large waste of energy from the rest of the PC.. This is because a 300W Personal Computer has to be used in order for a 10W CD ROM to operate. However with a few adjustments a CD ROM can operate without the need of the PC.

This project provides a solution for the above. When the CD ROM is connected to the PC, an audio CD Player program (software) is developed in order to extract the full range of audio capabilities of the CD ROM drive. The CD ROM is also controlled from the keyboard which is a new development. The monitor is not required when performing the basic audio functions, bringing down the power requirements to 200W.

The CD ROM can also function outside the PC as a stand alone unit, as it is already mentioned. In this case the hardware that will be provided is:

- A power supply
- An audio amplifier
- A track counter

Finally this work provides an answer to the question: Where do I connect my CD ROM?

In addition the different ways of interfacing a CD ROM to the PC, that can be found today can easily bring up some more questions.

- Is the most popular IDE interface the best?
- What if it isn't?
- What makes it the most popular interface?

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INTRODUCTION

This project mainly consists of three parts:

- Investigation
- Software development
- Hardware development and construction

Investigation

This refers to the work carried out in order to investigate which interface is the best one for the CD ROM to be connected to. However, while some research was made on traditional CD ROM interfaces, it was felt that it would have been useful if technical information was provided on all **popular** interfaces and buses, concerning the IBM compatible PC.

Software

The objective of the software is to extract the audio capabilities of a CD ROM drive, under Windows 95. The high level Windows (Windows 95 only) based programming language used is **Visual Basic 5.0** Enterprise Edition. This will be referred to as VB throughout the report.

More precisely the objective of the software, was to be able to perform the basic audio functions of a CD ROM drive using Windows API (Advanced Programmers Interface). The reason that VB was considered to be the most appropriate programming language for this is that it provides special procedures when it comes to API calls, making a Windows programmer life easier.

Hardware

The hardware developed is necessary, in order for the stand alone mode operation to be achieved by the CD ROM. Stand alone usage of the CD ROM drive is essential in order to provide a portable and low power solution to the problem.

The hardware consists of:

- The necessary power supply.
- The audio power amplifier that was developed and tested is based on Philip's TDA2616 IC
- A track counter which is used for displaying the current track of the playback operation, using seven segment displays.