HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING COURSE

DIPLOMA PROJECT

DEVELOPMENT OF A COMPUTER BASED PUBLIC DISPLAY SYSTEM

E / 927

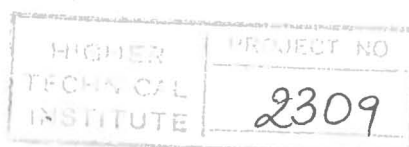MARIOS KIMONOS

JUNE 1994

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In part satisfaction of Award of Diploma of
Technician Engineer in Electrical Engineering of
the **HIGHER TECHNICAL INSTITUTE**
Nicosia ,CYPRUS

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Project Number: **E/927**

June 94

CONTENTS

CHAPTER FOUR: DT/R HARDWARE DESIGN

CHAPTER FIVE: CONSTRUCTION

CHAPTER SIX: MARKET RESEARCH

CHAPTER SEVEN: TESTING & TROUBLESHOOTING

CONCLUSIONS   45

INTRODUCTION

This project deals with the investigation of the various systems for transmission of computer based information to multiple monitors (Monochromes or VGAs) and TVs; together with the design, construction and testing of one such system.

There are basically two ways to transmit information, using wires and the wireless one. In our case, most designs are interfaced and controlled using wires. Serial communication is preferred as speed is not a critical, although some improvements are done to ensure safe data transmission.

Moreover presents the hardware design (no software control is used) of a line driver and receiver for both Monochrome and VGA monitors. The line driver is situated near the central computer and the line receivers are situated near the monitors. In this method the already processed monitor signals are utilized by the line driver and send via cable to the line receiver. The line receiver after restoring them to their original form sends them to the remote monitor and also to the next remote monitor in the same condition as it receives them.

Besides the above constructed methods some other options are proposed. The first one is an 8051 based CRT terminal controller. This application describes a basic low cost terminal with monochrome display a full function keyboard and a serial interface. Since the serial interface (RS-232) is not reliable for long distance transmission the RS-422 protocol (differential transmission) should be employed. These designs can be serially controlled be a host computer and can be located hundreds of meters away.

The second one, will be also controlled by a host computer but proposes the idea of using ready made motherboards (8086 based, XTs or

even ATs), that again will take care of the serial communication. Interface display cards, such as, the IBM Monochrome Display and Parallel Printer adapter and the Color/Graphics monitor adapter, can be used to control the remote monitors. Similar to the previous case the RS-422 protocol should be used for safe long distance transmission.

A UHF modulator is tested as well. This modulator converts audio/video output from video cameras, VCRs video disc computers, satellite receiver etc. to UHF channel for viewing on multiple TV sets without wiring. Since some CGA cards give an additional Video output, for viewing on TV sets instead of monitors, this output was used and achieve wireless transmission of data to nearby TVs.

Finally a look on the market was done so to see the available ready made solutions. VGA to Composite Video or S-Video adapters were found, VGA multipliers (1 to 8), sophisticated display cards with great features along with a few inexpensive practicable ideas.

These public display systems have a very good market as the need for information in our growing complex life is increasing. They can be used to display important or critical information at public transport systems even airports and seaports. Furthermore they can be used at sports centers and bet offices to display the results of the matches and likewise at banks to display the daily exchange rates. Generally you can say these systems can be used where information is addressed to many people and must be continuously available.