# DESIGN CONSTRUCTION AND TESTING OF A COMPUTERISED ATHLETIC EVENTS TIMER

Project report and construction submitted by:

GEORGIA MALACHOURIDOU

in satisfaction of the award of

Diploma of Technical Engineer

in ELECTRICAL ENGINEERING

of the HIGHER TECHNICAL INSTITUTE

CYPRUS

June 1992



#### SUMMARY

COMPUTERISED ATHLETIC EVENTS TIMER
Written and constructed by: GEORGIA MALACHOURIDOU
Supervised by: MARIOS KASSINOPOULOS

The purpose of the project is to design, construct and test a computerised athletic events timer.

In order to achieve this, a circuit to count the time is needed, as well as sensors to indicate the starting and finish of a race.

The result is needed to be displayed on a personal computer. For that reason an interface card and the appropriate software is needed. The result is also shown on seven-segment displays.

As it is known, in athletic events special sensors are used; photofinish devices. It is obvious that this project cannot be used wholly in athletic events. However if the necessary modifications, according to the athletic event, are made this project can be used in such application with a high degree of accuracy.

### TIMERS AND SENSORS DEVICES

1.0:INTRODUCTIONPage	5
1.1:Athletic event timers and photofinish devices	
Page	5-8
1.1.1:OTR-7:OTR-7 Timing device	ge 5-8
1.1.2:Photosprint OPS-2 photofinish devicePage	8
1.2:Sensors and Timer circuit used and alter	natives
devicesPage	8-13
1.2.1:Starting Sensor	8
1.2.2:Finish SensorPage	8-11
1.2.3:Timer:Principle of countingPage	11-13

## CONTENTS OF CHAPTER 2

2.0:Introduction:
2.1:Design of the timer circuit
and the control of t
2.1.0:Introduction:
Anne grand met rett grat isk vergier det seget begre
2.1.1:Inputs/Outputs needed:
. CONTRACTOR MAIN CHENDRICA CARROLLA
2.1.2:555 & its application to the systemPage 16-17
2.1.3:Start and finish detection
The constant which and the same states a
2.1.4:74LS190:Operation and applicationPage 20-22
2.1.5:D-Latches & Buffers as used in the cctPage 22-24
2.2:Construction of the timer
2.3:Components used
prises of little bayer that is sector to the import of the

#### CONTENTS OF CHAPTER 3

3.0:Introduction:	30
3.1:P.C interface cardPage	30-41
3.1.0:General information	30
3.1.1:8255 P.P.I	30-34
3.1.2:Address decoding circuit	34-38
3.1.3:Construction of the card	38
3.1.4:Components used	38-41
3.2:Software usedPage	42-44
3.3:Design and construction of the displayPage	45-47
3.3.0:Introduction	45
3.3.1:Design of the display	45
3.3.2:Construction of the display	
ordinate of the display	

## CONTENTS OF CHAPTER 4

4.0:Introduction		Page 50
4.1:Testing of the time	ner and display o	cardsPage 50-51
4.2:Testing of the P.C	: interface card.	Page 51-52
4.3:Disadvantages and	comments of the	cctsPage 52-53
4.4:Industrial applica		
4.5:Conclusions		
		The Control of Help of Salar