H.T.I.

ELECTRONIC ENGINEERING COURSE

DIPLOMA PROJECT

DEVELOPMENT OF A MP CONTROLLED HUMIDITY AND TEMPERATURE CONTROLLER

E/1080

KYRIACOU KYRIACOS

1997

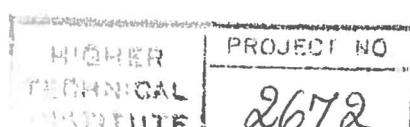# HIGHER TECHNICAL INSTITUTE

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Summary

This project deals with the design of a system which detects the Temperature and Humidity changes of its ambient environment and according to user defined limits, some actions are taken. All these values are shown on LCD display to the user.
The Temperature and Humidity are detected from appropriate sensors and passed to the system through ADC's (Analogue to Digital converters) .

The whole system was designed by the aid of a Computer Aided Design(CAD) program. First was designed the μP system and then the card with the ADC's and sensors. Interfacing of the two was obtained through a Programmable Peripheral Interface.

Software was written for the operation of the system as required and stored in system's EPROM. An 8085 assembler was used along with an EPROM programmer.

The operation of the whole system was tested using Logic Analyser (Disasembler) and oscilloscope.
The system was fully operating as was designed.

INTRODUCTION

This project deals with the development of a system that controls the temperature and humidity of a room. Such a system was studied, designed and constructed along with the appropriate software, having in mind the characteristics of the Integrated Circuits and sensors used.

The humidity sensor is based on the capacitive effect so the conversion from capacitance into voltage is studied, and the appropriate circuitry is constructed. In addition the analogue signals from the sensors are converted into digital by the use of Analogue to Digital converters in order to pass the information to the μP system for processing.

Two PCBs are presented in this project. First the μP's board and second the sensor's and converter's. The PCBs were designed by the use of a Computer Aided Design (CAD) program. In addition the procedure for construction of PCBs is described.

All the above mentioned circuits are calibrated and tested using appropriate laboratory instruments such as Logic Analysers, Oscilloscopes, Assemblers, etc.

For the user to configure the microcontroller properly, a user manual is presented.