

**FINAL YEAR PROJECT REPORT**

**DIPLOMA IN ELECTRICAL ENGINEERING (INSTRUMENTATION)  
MARA INSTITUTE OF TECHNOLOGY  
SHAH ALAM , SELANGOR**

**PROJECT TITLE:**

**TEMPERATURE DETECTOR**

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**JAN/JUL '98**

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## ACKNOWLEDGEMENT

In The Name Of Allah The Most Gracious  
The Most Merciful

All praise be to Allah (S.W.T), who having made pen the medium of education, taught man all that he did not know and making us able to complete this project and tackled the problem that arose. We would like to convey our deepest gratitude and appreciation to our advisor; Mr Mohamed Zulkifli B Abd Aziz , a lecture in the Department Of Electrical Engineering (Instrumentation) for his keen interest, guidance, inspiration and advice for the completion and success of this project. His constructive criticism and suggestions rendered in the preparation of the project deserved special thanks.

We also like to thank those who directly or indirectly gave a touch for the success of this project. Our greatest and ultimate debt is due to Allah The creator of the Heaven and Earth , may He pardon and forgive our failings and weakness , strengten and enliven our faith in Him.

Amin....

Thanks.

## PREFACE.

In industries there are many type of physical parameter that can be measured and controlled such as flow , level and temperature. All these parameters can be measured by using either microprocessor, PC or electronic devices.

In this project we have tried to used' microprocessor as a controller for controlling all these parameters. Due to the lack of information on how to build up the program in assembly language for M6800 ,we have decided to proceed the project on one part of the parameter first, that is Temperature/Humidity Detector.

Originally this project, was designed to measure a temperature ranges from -50 C to + 100 C by using sensor head LM 35CZ. Unfortunately this LM 35CZ IC is not available in the market locally. So we have to change the whole sensor head circuit to a new one. This new sensor head circuit can only detect temperature by neglecting the humidity.

After this modification and simulation by using LM 335CZ IC, the new range of temperature is found to be from -10 C to 100 C.

## 1.0 INTRODUCTION.

Of all the physical parameters that can be measured using electronics, temperature is one of the most commonly required. For many years the standard temperature sensor has been either the thermistor which varies its resistance with temperature or the thermocouple which produces a tiny voltage proportional to temperature. Unfortunately both these approaches have considerable problems over the normal range of temperature; non linearity the requirement for cold junction compensation and the resultant systems are often costly, difficult to calibrate and can still exhibit problems at reduced accuracy and drift.

Over the last few years a number of integrated circuits have been produced to overcome these problems, ICs like LM 3911, LM 335, and AD 590 are excellent and accurate temperature sensors where they produce outputs which vary as a function of the temperature in degree Kelvin. Hence these sensors always require 273.2 C effectively subtracting from their outputs.