

**DEPARTMENT OF ELECTRICAL ENGINEERING  
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**FINAL REPORT OF DIPLOMA PROJECT**

**TEMPERATURE MEASUREMENT USING TRANSISTOR AS  
A SENSOR**

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## **ABSTRACT**

Today actually on the go to new era of technologies. Time past and change and everyone try to find something different from the latest technology. Computing, communication, information technology and microelectronic are the most interested field that scientist concentrate for.

Then try to familiarize with the part of this technology by construct the project, which use to measure temperature using commercially available sensor. This simple temperature sensor built around a transistor (used as a diode) and a single-chip analogue-to-digital converter (ADC) cum 3½ digit LED divider ICL7107. Transistor T2 is use as a sensor, the system have two preset level higher and lower level.

A few passive components that easy to get from our local electronic component supplies are used. The components are such a resistor, capacitor and diode, some active components as linear ICs and transistor.

Finally, from displaying the temperature with a resolution of 0.1°C, this project provides from temperature-based relay activation for controlling heaters, coolers, iron and also at air conditioner.

# CHAPTER 1

## INTRODUCTION

### 1.1 BACKGROUND THEORY:

The operation of this project is simple, combination from ICs can shown the decimal digit at the display which built around a transistor (used as a diode) and a single-chip analogue-to-digital converter (ADC) cum 3½-digit LED driver IC17107. Apart from displaying the temperature with resolution of 0.1°C, this circuit temperature measurement circuit provide for temperature-based relay activation for controlling heater and cooler.

The temperature measurement system using a transistor as a sensor, will be divided in three different circuit as follows:

1. The power supply circuit.
2. Temperature measurement circuit.
3. Display circuit.