MARA UNIVERSITY OF TECHNOLOGY

FACULTY OF ELECTRICAL ENGINEERING

PROJECT II (KEU 380)

TITLE : REFRIGERATOR TEMPERATURE CONTROLLER

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ABSTRACT

All refrigerator are incorporated with a temperature controller which can be used to adjust its inside temperature. This device is usually complicated and cannot be repaired easily. Our project is designed to build a cheap and effective electronic temperature controller The temperature converted into voltage by means of zener IC1 (LM 335) which holds its voltage at 2.73v at 0^0C.When the temperature increases, the zener voltage increases linearly by 10mV/^{0}C. An elaborate circuit is needed to disconnect the auxiliary winding inside the compressor in this project we used three Ics; LM335 (zener diode), CA3140 (op-amp) and 7812,12V(regulator).

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Bismillahirahmannirrahim...

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Afzan bt Zainal & Aznida bt Ramli /06

CONTENTS	PAGE

INTRODUCTION

TEMPERATURE CONTROL

If we would like to serve the food at temperatures 50-55 degrees F, our standard refrigerator won't usually maintain a temperature this high. How do we solve thus problem at home? The best way is to use temperature controller. This is the devices that overrides the internal thermostat in the refrigerator and allow us to set the temperature more precisely and in the range we need.

To understand how temperature controller works, we need to understand how the refrigerator works. Basically this is a compressor that pumps cold refrigerant. These coils then cool the air inside the refrigerator. When the temperature inside compartment is above the setting on the thermostat, a switch is closed which applies Ac power to the compressor, causing the air inside to cool down. When the thermostat's setting, the switch is opened shutting off the compressor. Since no more cooling is taking place, eventually the temperature inside will rise again causing the switch to be closed, turning on thee compressor and so on.

All the refrigerators are incorporated with a temperature controller which can be used to adjust its inside temperature. This devise is usually complicated and cannot repair easily. The electronic temperature controller given here is more accurate, cheaper, easily repairable and more effective. The temperature is easily set over wide range, 10^{0}c to 30^{0}c or 3^{0}C to 25^{0}C, since the range is adjustable. This increases the reliability and the wide range of temperature makes the device more versatile.