FACULTY OF ENGINEERING
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FINAL REPORT OF DIPLOMA PROJECT

KEU 380

DUTY-CYCLE MONITOR

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ACKNOWLEGDEMENT

With the name of ALLAH S.W.T. the most gracious and merciful. Thankful to the all mighty, ALLAH S.W.T. for giving us the permission to go through and finally finish this project with successfully. If there any person that we must give our deepest sense of gratitude in completing this project, it would be our supervisor, Miss Norhayati Bt. Mohammad Noor for her never ending patience dealing with every single problem had by us and her generosity for sacrificing her precious time in order to give us guidance and advice.

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Lastly we are proud to ourselves because we manage to finish this project even we had so many problem while finishing this project. We hope we learn many things and it is very expensive experience that we had.

Abstract

Assalamualaikum w.r.t.bt.

Our project is "Duty-Cycle Monitor". We choose this project because it has many application and important for everyone. This project is about become the solution to have a good frequency waveform when we are using the oscilloscope.

This project is simple and can save our cost from bought another oscilloscope. It helps us to have a good and clean waveform.

We hope it can help all of us to have a clean reading waveform.

Wassalam.

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CHAPTER 1

INTRODUCTION

1.1 Introduction

Are your square waves really "square"? Does your pulse train have the proper on/off ratio? The only way to be sure of the answers to such questions when working with a waveform is to measure its duty cycle.

An accurate measurement of a pulse train's duty cycle, or mark/ space ratio, is usually a tedious matter. First the period of the train must be calculated using those figures. Generally, an oscilloscope or a frequency counter incorporating time-period capability is required to do this.

If you have struggled with these techniques, you can put away your oscilloscope or counter and build the Duty-Cycle Monitor described in this article. It's simple enough to assemble in one weekend. This is a stand-alone instrument that displays a real time duty-cycle reading of 0% to 100% on its built-in meter.

Using a 100-microamp-meter movement allows a direct reading of the duty cycle without using a multiplier (for example, a 45 micro amp reading indicates a 45% duty cycle). The circuit is accurate to within 1% of full scale over the range of about 30 Hz to 100kHz or higher, within an input voltage range of +1.5 to +15 volts, which covers most logic families. Maximum input voltage should be restricted to ±50 volts peak. The input impedance is about 100000 ohms, so circuit loading is not a problem.

1.2   Objective