



PORTABLE TRAFFIC LIGHT SYSTEM

MUHAMMAD ABRAR BIN ABDUL HAMID
MOHAMAD FAIRUZ BIN AHMAD

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FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITI TEKNOLOGI MARA
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ABSTRACT

This thesis is about the design and development of the prototype of portable traffic light system with one indicator display instead of three. This thesis includes the review of current traffic light system with three indicators which includes the calculation for timer of the traffic light based on the speed and the length of the vehicle. This portable traffic light prototype is not designed to be used at the junction as normal traffic light but to be used as temporary traffic flow control when a stretch of two ways road or two lanes is under circumstances of only one lane can be used. Therefore this traffic light will allow the flow of traffic in one direction alternatively. There will be only two poles of this traffic light called main pole and sub pole. Firstly, a lot of researches and surveys conducted to get as much as possible information on how to design the best prototype ever. The research also includes the study of the hardware used in the prototype. The design begins with the decision of the hardware to be used so that software can be designed afterward. The software is designed using flow chart before write the program codes using PIC assembly language. Simulation is used to help debugging the software and to ensure the success of software design. Then the real development is started with hands on activities to build the modules for the traffic light. Generally, there are five modules build. These modules are voltage regulator, controller, relay, user control panel and lastly traffic light indicator. Voltage regulator is designed using power transistor 2N3055 because the prototype consumes current more than the conventional 7805 could support. The controller used PIC18F4550 microprocessor which then connected to relay module to drive the high current to traffic light indicator module. The user control panel module is just added feature to allow user to set timer for green time of the traffic light. To satisfy the portable functionality, this prototype will run on battery.

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CHAPTER I

INTRODUCTION

1.1 Background of study

When a stretch of two ways road is under maintenance and one side needs to be closed down, flagman take step to control the traffic to allow only one side of traffic to through alternately. Figure 1.1 is the illustration of the stated condition. Portable traffic light in this project is placed at flagman area to replace the flagman itself. In this case, the traffic light is very useful to minimize the human labour and therefore minimize the labour cost.



Figure 1.1 Visualization of two ways road under maintenance

As currently in Malaysia, there is no one indicator display traffic light is used yet and as far as we concern, no portable traffic light currently in used as well. Therefore this project is a very innovative project that offers a new step further in traffic light design and usage. Traffic light consists of the indicator signal and the controller. Nowadays, manufactures use LED instead of bulb for its long life and power efficiency. This project of one indicator display will also use LEDs with colour changing functionality. This will save the production cost as the very low price of LED in the market. Since the traffic light is portable therefore the benefit of one indicator display is that the size is smaller which is a lot easier to handle as portable traffic light.