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Thesis submitted in fulfilment of the requirements
for the award of the degree of
Bachelor of Engineering Technology in Electrical

Faculty of Engineering Technology
UNIVERSITI MALAYSIA PAHANG

SEPTEMBER 2017

ABSTRACT

The large quantity of electricity of many countries is consumed in lighting the streets especially in highway. Most of the basic street lighting systems are switched ON/OFF at regular intervals of time. In this thesis, the system is to develop a street light energy saving control system to reduce energy if no vehicles pass through certain roads. Logically, this system may save a large amount of electrical power in a long term. Besides that, this project also may increase the lifetime of the street light lamp as well as reduce the pollutions. The operation of this system is to OFF the street light if no vehicles passing through the road. When the PIR sensor detects movements of the vehicle, the relay that act as a switch will turn ON the street light. Four microcontroller which are Arduino Uno have been used as the controller for the project. In addition, there are other components used for this system which are PIR sensor, 1 channel 5V relay module and RF 433MHz Transmitter - Receiver module. PIR sensor function as a vehicle detector. The RF 433MHz Transmitter – Receiver module that are inside the circuit will send and receive information that get from the PIR sensor. Range of the signal from the 433 MHz Transmitter – Receiver module are the key factor that need to be considered to make this system working as desired.

ABSTRAK

Kuantiti besar tenaga elektrik di kebanyakan negara digunakan pada lampu jalan. Kebanyakan system lampu jalan asas bertukar ON / OFF pada selang masa yg tetap. Dalam tesis ini, system ini adalah untuk membangunkan satu system kawalan penjimatan tenaga lampu jalan untuk mengurangkan tenaga jika tiada kenderaan melalui jalan-jalan tertentu. Secara logiknya, system ini boleh menyimpan sejumlah besar kuasa elektrik pada jangka masa Panjang. Selain itu, ia boleh meningkatkan jangka hayat lampu dan mengurangkan pencemaran. Operasi system ini adalah untuk memadamkan lampu jalan jika tiada kenderaan yang melalui jalan raya. Apabila sensor PIR mengesan pergerakan kenderaan, relay yg berfungsi sebagai suis akan menyalakan lampu jalan. Empat mikrokontroler Arduino Uno telah digunakan untuk mengawal system di dalam projek ini. Tambahan pula, terdapat komponen lain yang digunakan untuk projek ini iaitu sensor PIR, 1 saluran 5V modul relay dan RF 433 MHz Pemancar - Penerima. Modul pemancar RF 433MHz yang berada di dalam litar akan menghantar dan menerima maklumat yang diperoleh daripada sensor PIR. Julat isyarat dari 433 MHz Pemancar - Penerima adalah faktor utaman yang perlu dipertimbangkan untuk membuat sistem ini berfungsi seperti yang dikehendaki.