ABSTRACT

The number of vehicles in Indonesia continues to increase every year. Based on data from the National Police Headquarters the number of motorcycles circulating in Indonesia in the past five years increased from 17,002,130 units to 76,381,183 units. Therefore traffic lights play a very important role in transportation. With the traffic lights, it can help police officers more easily do the work in dealing with congestion. It will be different if there is no traffic light. In that case, the motor rider, the community and the police will stuck in traffic jams during their daily activities on the trip. For this reason, it is necessary to apply the traffic lights to prevent traffic jams. The design of this traffic light control system uses Arduino Uno as the controlling brain of all connected components and to process the data. The data that has been scanned from sensors, infrared sensors and photodiode is used to detect the presence of vehicles. In the photodiode sensor testing, it can only detect vehicles with a maximum distance of 80 cm. We use 2 pieces of XBee S2 pro as Coordinator and Router. XBee as a Router is used as a mean of communication between XBee from Arduino through Radio Frequency media. XBee as a coordinator is used to display on a PC created using Visual Basic 6.0. XBee testing can only communicate between XBee at a maximum distance of 5 meters more than that, it will experience Zigbee LOSS Error. Visual Basic software is used to display and monitor the use of tools at traffic lights. The LED is used as a traffic light indicator and a time indicator of the lights and a 16x2 LCD to display the time duration and number of vehicles. From the overall test, this Final Project has worked as expected. It can be used that operated based on the default settings that has been specified and can monitor the working system of the device.

Keywords: Traffic Light, Arduino Uno Microcontroller, Arduino, Infrared and photodiode sensor, LED, 16x2 LCD and XBee S2 pro.