

PROTOTIPE SISTEM PERINGATAN DINI PADA PERLINTASAN KERETA API TANPA PALANG PINTU MENGGUNAKAN NODE MCU 8266

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ABSTRACT

Lately, traffic accidents at railroad crossings have often occurred, almost all of the Indonesian Railways Operational Areas (DAOP) have experienced traffic accidents. The cause of these accidents is generally due to the absence of crossroad latches or failure to cross doors to close when needed or failure of operators to closing the crossing (human error). It resulted in many casualties, both those who were only injured and those who died and several other material losses. Meanwhile, it is recorded that in the DAOP VI Yogyakarta and Central Java there are more than 508 railway crossings and there are still many unwatched railroad crossings in other areas. In reducing traffic accidents on railroad tracks, each track must be provided with a track gate and early warning for railroad crossing users. In this final project research, a system is designed to commemorate railroad crossing users using a NODE MCU ESP8266 microcontroller as a control component with solar panels as power supply, batteries as power storage generated by solar panels, LM2696 regulators as voltage reducers. The input uses ultrasonic sensors to start a train and output in the form of an LCD as an early warning in the form of text and a buzzer as an early warning that emits a sound to warn users of the railroad crossing. From the battery life calculation on Server, Client 1, and Client 2, Server results are obtained for 20 hours 50 minutes, Client 1 and Client 2 for one day 10 hours 16 minutes. From these results that the battery can last for one day without power supply from the solar panel and the battery charging time on the Server, Client 1, and Client 2, the battery charging time results are 984 minutes or 16 hours 4 minutes.

Keywords: *Railway Demand, NodeMCU 8266, Solar Panel, Ultrasonic Sensor.*