

DESIGN AND CONSTRUCTION OF ELECTRICAL CONTROL SYSTEMS AND MONITORING SYSTEMS FOR THE USE OF KWH METER IN BOARDING ROOMS BASED ON ARDUINO

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ABSTRACT

The electricity control system and postpaid kWh meter usage monitoring system have an important role in regulating and monitoring electrical energy consumption. The author discusses the implementation and benefits of the two systems. The electrical control system in boarding rooms aims to manage the distribution of electrical energy efficiently and reduce the risk of overloading the electrical network which can result in short circuits and damage to the load itself as well as increasing overall energy efficiency. So a control and monitoring system was designed using a voltage sensor with readings of voltage, current, power and energy used and could be displayed and monitored via the screen. This research aims to design and implement a system that can monitor and control the use of electrical energy effectively for its users. Therefore, this research focuses on designing an electrical control and monitoring system in boarding rooms which is equipped with a PZEM-004T sensor as a voltage and current sensor and an I2C LCD to display reading results, voltage, current, power, energy. Design of the control system and monitoring system using Arduino IDE 2.3.2 software. This software is used to design a system to control and display what has been read by the voltage sensor. The monitoring system implemented successfully controls and monitors power and energy usage manually. The validation test results produced total system accuracy with voltage and current variables reaching 98.59% while total system precision reached 99.86%

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