ABSTRACT

Uninterruptible Power Supply (UPS) is a backup power supply that directly supplies the electricity load when the main power source goes out. However, UPS battery is usually only supplied by PLN and cannot yet display the capacity of batteries used in real time and cannot be set remotely. This final project aims to design an IoT UPS that can accommodate electricity from renewable electricity source and PLN.

The UPS is designed using two batteries, inverter, relay, voltage sensor, current sensor, voltage detector and microcontroller that already has a Wi-Fi feature. Current and voltage sensors are used to measure battery capacity and measure the load current. This UPS also have a AC detector that can monitor the state of the PLN power supply. The measure data is sent to the android application. Android application can also be used to view the remaining battery and change the power supply that supplied by UPS.

The designed UPS can change the power supply between PLN and the backup power supply based on the state of the PLN and the user's command, choose batteries in the charging path and also discharge path based on the voltage that measured by the microcontroller, protect the system from over current use, and can be controlled and monitored by users through the android application.

This UPS requires parameters in battery selection operation and inverter protection from currents in excess of 2 A. The parameter that used to move the battery is the voltage value that measured by the microcontroller with precision of 99.809 ± 0.293 % in 30 tests, while the parameter that used to protect the inverter from currents exceeding 2 A is the value of the load current that measured by the microcontroller with precision of 90.76 ± 3.732 % with the same number of tests.

Key words : Uninterruptible Power Supply, Internet of Things, renewable energy sources