Abstract

Agriculture is the largest livelihoods in Indonesia, but its management is not optimal. The Problems are human error and the lack of farmer's knowledge about irrigation techniques. It can be solved by applying the automated irrigation system with many advantages such as the accuracy of observed data and human error minimalization.

The author built telemetry prototype system to implement SRI (System of Rice Intensification) irrigation method into database processing algorithms. The parameters used are water level measured by ultrasonic sensors on the sensor node, and age of the rice. This data is sent to server using APC220, then processed in database to generate the irrigation command which sent back to actuator on the sensor node.

The results of sensor's accuracy testing shows a comparison between sensor's water level measurements and manual measurements has deviation value of -0.11 to 0.19 cm. The database processing accuracy testing shows database processing in this system is match with SRI irrigation methods. While performance testing show that the system has an acceptable end-to-end delay based on ITU-T standard for transactional data network, with value of 214.1 ms, and the optimum distance between the sensor nodes and the server is 150 m.

Keywords: irrigation, SRI, Telemetry, APC220, ultrasonic sensor