

ABSTRACT

Mina padi is an integrated agricultural cultivation system that combines rice cultivation techniques and fish cultivation which are carried out simultaneously in one paddy field. In managing the cultivation of mina padi, of course there are several obstacles, one of which is the pH of water. pH with another name "Potential of Hydrogen" is the degree of acidity of solution which depends on concentration of H⁺ ions and OH⁻ ions in solution. Acidic waters tend to cause death in fish as at pH values that are too alkaline. At a water pH that is too low or too high can cause stress and low fish survival. This study aims to help cultivators monitor the quality of water pH in real time, it is hoped that it can help minapadi cultivation to be more optimal. This study uses a pH sensor to measure water pH and water level using an ultrasonic sensor and for water circulation using a dc pump. Method used in this research is the SAW method to average pH value, the communication protocol uses MQTT dashboard and the control center uses ESP32. Results of the study with 2 pH sensors produced an accuracy rate of 97%, for pH sensor 1 and pH sensor 2 produced an accuracy rate of 97% with a total of 60 trials, while ultrasonic sensor produced an accuracy of 100% with a total of 30 tests. Then QoS delay value is 0.2629 ms from 20 trials and jitter is 0.7561 ms from 20 trials. Thus, results of this study indicate that prototype used produces good performance.

Keywords: Mina Padi, pH, Monitoring, MQTT dashboard, SAW