ABSTRACT

The conversion of agricultural land in Indonesia is increasing every year. There is one way of farming using a narrow land or yard, namely hydroponic. In hydroponic agriculture, the thing that must be considered is the regular monitoring of the nutrient solution.In this research aims to design a LoRa-based hydroponic monitoring system using a TDS sensor to measure the ppm value and a pH sensor to measure the pH value and implement linear regression to optimize sensor value readings. Data from sensor readings will be monitored in real time through the android application. The application will send a notification when the ppm value is less than 600 or the pH value is less than 6 or more than 7. From the sensor test results, the linear regression equation Y=-92.647+1.2234X can increase the accuracy of the TDS sensor value reading. While the linear regression equation Y=-0.046+1.0042X when implemented into the pH sensor program code, not all buffer liquid samples increase in accuracy. Then from the results of the LoRa communication test the end device can only send data up to a test distance of 4 km while for a distance of 5 km the end device can't send data because of the long distance and there are obstacles in the form of hills. For the overall test results, the TDS sensor has an average error of 3.1% while for the pH sensor it is 2.9%.

Keywords*: hydroponic, LoRa, TDS Sensor, pH Sensor, Linear Regression*