

ABSTRACT

Aquaponic is a farming system which combines aquaculture system with hydroponics system in the environment are symbiotic. Of course the aquaphonic system will be very beneficial because it can keep the fish farm at the same time. But on the other hand aquaphonic is in need of attention and care because their system of aquaculture and hydroponics will mutually influence each other.

Thus in the final assignment is designed a prototype automation aquaphonic system to perform the process of monitoring and running actuators that work automatically when there is a change in the elements of plants and aquaculture fits the concept of the IoT (Internet Of Things). The parameters of the item focused on using nodeMCU as a microcontroller, sensors, ultrasonic sensors, ph, water temperature sensor (DS18B20), relay, and micro servo. IoT communication protocol used for this final task is the MQTT (Message Queue Telemetry Transport) and use the interface in the form of android applications.

Based on the results of the testing that has been done, the distance between the sensors node maximum easy with access point is 50 metres away. The distance affects the performance system, that is, the farther the distance range of the sensors node with access point then declining system performance. On the system as a whole, the median value of the mean delay was 0,10512seconds. While the median value average throughput is 566 Bytes/s. In addition the median value for PDR is 99,725%. For the median value availibility and realibility system that is 98.258% and 98.204%.

Keywords : *Aquaponic, IoT, MQTT, Automation, QoS.*