

ABSTRACT

Water is one of the sources of life for all living things, especially humans. As time goes by, the availability of water is increasingly limited, so a water reservoir is made, namely a reservoir. Water reservoirs are generally placed above a high place in a multi-storey building to facilitate the distribution of water to lower places. Several years ago, to fill the water in the reservoir still used a manual switch so that it could not be known exactly when the water in the reservoir was empty or when the water was full, the water caused over flooding. For now, many households or multi-storey building owners use a float pump sensor to detect the contents of water in the reservoir. However, for owners of multi-storey buildings of more than three floors, using a buoy sensor will increase the cost of pulling cables.

In our capstone design, we offer a water pump sensor that can communicate wirelessly so that high-rise building owners do not have to worry about costs. The water pump will automatically turn on when the contents in the reservoir are <30% capacity and can turn off the water pump when it reaches 90% of the reservoir capacity. We also created an application that can monitor the water content in the reservoir as well as a history graph so that the owner knows how often the pump turns on. With the tools we make, building owners can estimate if there is a sudden increase in water costs.

From the analysis of the test results of IoT devices and applications, it shows that the ESP-Now Non Line-Of-Sight and Line-Of-Sight tests can communicate data at a distance of 10 - 50 meters, both vertically and horizontally with a success rate range of 80% - 100%. In addition, other tests such as waterproof show the tool is resistant to water tested for 1 minute of watering water, and the power supply test shows the power provided is stable in the 12V-13 V range. QoS testing is carried out on IoT devices and applications by taking delay and throughput parameters in ITU-T G.1010 standardization. The results of these tests produce numbers that fall into the ITU-T G.1010 standard, namely > 250ms and ~ 1KB. In the notification feature in the application, this feature runs well which shows the application can communicate between firebase cloud messaging and flutter.

Keywords: Water pump, Wireless, High rise building. IoT, QoS, ESP- Now, Non Line-Of-Sight, Line-Of-Sight