ABSTRACT

Most farmers in Indonesia still rely heavily on rainwater to meet the water needs of their crops. Lack of water can affect the growth and development of plants planted by farmers, so that the success of harvesting is strongly influenced by how well the plants get enough water intake from the soil.

Automatic watering of plants based on soil moisture with Whatsapp notifications so that they can receive notifications in the form of microcontroller-based messages is one way that can be used to monitor plants to keep their water needs fulfilled. So that the plant owner only needs to monitor the development of the plant without having to go directly to the plantation. This system uses ESP32 as a microcontroller so that it can directly send reports in the form of Whatsapp notifications to plant owners via the internet network. By using the YL-69 Soil Moisture sensor to measure soil moisture and the DHT11 temperature sensor, the obtained soil moisture measurement results will be sent and reported to the plant owner's smartphone in the form of a Whatsapp notification that can be accessed anywhere. The keypad is used to change the desired humidity level and can adapt to all plants because it can set the upper and lower limits to turn on the Relay. When the sensor detects that the soil moisture conditions are dry, the ESP32 will instruct the relay to turn on the water pump and water the plants.

The results of testing the automatic watering system can function properly. Overall, the performance of this automatic watering system is in accordance with the design, namely the user managed to get soil moisture information from the Whatsapp application. From the Quality of Service (QoS) testing and analysis, the best QoS value was obtained during free hours in the early hours of the morning with the smallest delay of 1,895 seconds, the largest throughput of 2241,7667 bps, and the lowest packet loss value of 0%.

Keyword: ESP32, Relay, DHT11, Soil Moisture YL-69, Keypad, Whatsapp