ABSTRACT

Watering is the most important part when caring for bonsai plants, regular watering will make the bonsai roots embedded in the pot always get water intake. Then it is necessary to water bonsai plants automatically so that soil moisture is maintained at the required value. This study designed an automatic watering system for bonsai plants using the PID method. The system design is made using a 16x2 LCD as the output data display on the system, the soil moisture sensor uses a soil moisture sensor, all sensor data will be processed by Arduino Uno so as to produce PID values for the L298N motor driver output and DC pump. The automatic watering system on bonsai plants using the PID method is designed to be able to carry out watering automatically by maintaining the desired soil moisture sensor value, which is around 70 to 80 percent. The results of the overall system testing showed the best PID tuning results with parameters kp=20, ki=15, kd=15 with a stable response reaching the setpoint value and error of zero and the resulting PWM value increasing or decreasing in proportion to the given Kp parameter.

Keywords: Arduino Uno, soil moisture sensor, bonsai plant