

ABSTRACT

Name : Yusup Susanto

Study Program : Electrical Engineering

Title : HC-SR04 Ultrasonic Sensor Performance Analysis on Wind Speed Measurement

Wind is the movement of air parallel to the earth's surface. Air moves from areas of high pressure to areas of low pressure. Wind speed is measured with a cup anemometer, an anemometer that is often used by BMKG. Cup anemometers have a weakness in response to rapidly changing wind conditions. The cup will spin when the wind hits the cup, but the cup will continue to spin when the wind suddenly stops because the cup has a residual force that can keep rotating. To overcome this, a wind speed detector was made using an ultrasonic sensor HC-SR04. The process carried out is to store the ultrasonic sensor between the TX and the RX, which is kept facing each other, then the wind is blown in the direction of TX and against TX. The result of the difference in the speed of data and sound is the wind speed. The testing process is carried out using a fan with a speed of 0.5 m/s to 2 m/s and at the fan position to the sensor from 0° to 180°. The test results produce the lowest average error of 3.8% and the highest 98.1%. The more parallel the position of the fan with the sensor, the smaller the error generated. The more perpendicular the position of the fan to the sensor, the greater the error generated.

Keywords: *Wind, Anemometer, Speed, Ultrasonic, fan.*