

## ABSTRACT

*Waterbath is a device that used to create a constant temperature. This tool is used to incubates in microbiology analysis. Temperature is maintained according to the desired range. The heating element is controlled by the heater driver.*

*This module is created by using Arduino Atmega 328 as a minimum system and time controller. And using DS18B20 sensor as a temperature sensor. The design of this study use pre-experimental methods with after only design research.*

*The measurement results are done by comparing the module with a standard measurement instrument that produces the biggest % error in setting temperature of 37 °C which is equal to 1.21%, it is related to the boundary between water temperature and temperature setting too short which is affected on the DS18B20 temperature sensor reader that need time, to get a stable temperature reading. The minimum % error located at 60 °C of setting temperature which is equal to 0.11%, because to reach the temperature setting need a long time so that DS18B20 the sensor reading is stable. The value % error of the timer is 3.4 % which the amount of the error is affected by the number of DS18B20 which is used and the delay from the microcontroller. Based on the results obtained this module can be used properly because still on the maximum limit error value less than 5%.*

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*Keyword : Temperature control, DS18B20 Sensor, Timer, waterbath*