

## ABSTRACT

*Waterbath is a laboratory equipment that is used to incubate samples through a medium of water or special liquid that can maintain temperature under certain conditions during the specified time interval. To maximize water bath performance, it is necessary to have a water level detection indicator as a safeguard of water volume so that the heater does not get damaged and safety controls aim so that the temperature in the waterbath does not exceed the set temperature and the temperature monitoring system is used to ensure that the temperature is distributed equally.*

*This module uses the thermostat and water level as safety control. Water level sensor is used as water level detection with LED indicators. The author uses the Arduino Uno microcontroller as a controller of the safety heater system in the form of water level and temperature distribution monitor.*

*The results of the waterbath temperature measurement data obtained the greatest error value at sensor point 1 of 1.51% at 37°C, at sensor point 2 of 1.36% at 37°C, at sensor point 3 of 1.12% at the temperature is 37°C, at sensor point 4 is 1.81% at 37°C. This value is still below the error tolerance limit of 5%.*

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**Keyword :** *Temperature Distribution, Safety Control, Waterbath*