

ABSTRAK

Bakteri merupakan organisme *uni seluler*, serta berukuran *microscopic*. Bakteri tidak hanya merugikan bagi manusia ada juga yang memiliki manfaat, antara lain : *Escherechia coli*, *Acetobacter Xylinum*, *Streptococcus termophylus* Penulis membuat modul dengan judul “*Colony Counter*” *Colony Counter* adalah alat yang berfungsi untuk menghitung jumlah *microbe* pada cawan petri atau media lainnya dengan menggunakan *LED (Light Emitting Diode)* sebagai penerangan dan Pen sebagai penanda objek agar *colony* yang sudah dihitung tidak terhitung ulang, *limit switch* sebagai *counter* yang langsung dihubungkan ke mikrokontroler kemudian hasil perhitungan koloni yang telah dihitung ditampilkan pada *display LCD (liquid crystal display)*.

Penulis melakukan pengukuran pada modul sebanyak 20 kali pengukuran dengan 2 kondisi, sehingga didapatkan hasil untuk tegangan TP 1 (PB.0) saat kondisi *ON* dengan tegangan rata-rata untuk 20 kali pengukuran sebesar 4,914 *Volt* dan TP 1 (PB.0) saat kondisi *OFF* sebesar 0,018 *Volt*, sedangkan tegangan pada TP 2 (PB.1) saat kondisi *ON* didapatkan tegangan rata-rata untuk 20 kali pengukuran sebesar 4,8934 *Volt* dan tegangan untuk TP 2 (PB.1) saat kondisi *OFF* didapat sebesar 0,0008 *Volt*. berdasarkan data tersebut diperoleh nilai simpangan (*error*) pada TP 1 (PB.0) saat kondisi *ON* sebesar 0 *Volt*, TP 1 (PB.0) saat kondisi *OFF* 0,01 *Volt*, TP 2 (PB.1) kondisi *ON* 0,45 *Volt* jadi dapat disimpulkan bahwa besarnya nilai *error* yang didapatkan dari data tersebut pada pengukuran TP 1 (PB.0) kondisi *ON* sebesar 8,6%, TP 1 (PB.0) kondisi *OFF* sebesar 0%, TP 2 (PB.1) kondisi *ON* sebesar 2,13%, TP 2 (PB.1) kondisi *OFF* sebesar 0% dan nilai *standart deviasi* yang dihasilkan berdasarkan nilai rata-rata pada TP 1 (PB.0) kondisi *ON* yaitu sebesar 0,2236, TP 1 (PB.0) kondisi *OFF* yaitu sebesar 0, TP 2 (PB.1) kondisi *ON* yaitu sebesar 0,056, TP 2 (PB.1) kondisi *OFF* yaitu sebesar 0, dan diperoleh nilai ketidakpastian yang didapatkan dari TP 1 (PB.0) kondisi *ON* sebesar 0,1581, TP 1 (PB.0) kondis *OFF* sebesar 0, TP 2 (PB.1) kondisi *ON* sebesar 0,0125, dan TP 2 (PB.1) kondisi *OFF* sebesar 0.

Kata Kunci : *Colony Counter, Limit Switch, Bakteri, Colony, Counter.*

ABSTRACT

*Bacteria is unicellular organisms, as well as microscopic size. The bacteria is not only detrimental to humans, there are some of them which have benefits for life, namely: **Escherichia coli, AcetobacterXylinum, and Streptococcus thermophilus.** In this paper, the author makes module with the title "**Colony Counter**". Colony Counter is a tool that serves to count the number of microbes in a petri dish or other media using LEDs (Light Emitting Diode) as lighting and Pen as a marker of an object in order to the colony that has been calculated is not counted again, limit switch as counter directly connected to the microcontroller then the result of the colony count that has been calculated is displayed on the LCD display (liquid crystal display).*

The author has performed measurement to this module for 20 times with 2 conditions, so that the result obtained for the voltage TP 1 (PB.0) in "ON" condition with the average voltage for 20 times of the measurement is 4.914 Volt and TP 1 (P.O) in "OFF" condition is 0.018 Volt, while the voltage at TP 2 (PB.1) in "ON" condition with the average voltage for 20 times of the measurement is 4.8934 Volt and the voltage for TV 2 (PB.1) in "OFF" condition is 0.0008 Volt. Based on the data, the value of deviation (error) on the TP 1 (PB.0) in "ON" condition is 0 Volt, TP 1 (PB.0) in "OFF" condition is 0.01 Volt, TP 2 (PB. 1) in "ON" condition is 0.45 Volt, so it can be concluded that the magnitude of the error value obtained from the data at the measurement of the TP 1 (PB.0) in "ON" condition is 8.6%, TP 1 (PB.0) in "OFF" condition is 0%, TP 2 (PB.1) in "ON" condition is 2.13%, TP 2 (PB.1) in "OFF" condition is 0%, and the result of standard deviation value based on the average value of the TP 1 (PB.0) in "ON" condition is 0.2236, TP 1 (PB.0) in "OFF" condition is 0, TP 2 (PB.1) in "ON" condition is 0.056, TP 2 (PB.1) in "OFF" condition is 0, and uncertainty value obtained from TP 1 (PB.0) in "ON" condition is 0.1581, TP 1 (PB.0) in "OFF" condition is 0, TP 2 (PB.1) in "ON" condition is 0.0125, and TP 2 (PB.1) in "OFF" condition is 0.

Keywords: Colony Counter, Limit Switch, bacterial, Colony, Counter.