ABSTRACT

Main purpose from DSK practical session is aimed for practicum user to fully understand and can take conclusion about phenomena happened in automated control system when given certain conditions. The data acquisition system in practicum are expected to provide help in practicum exercise, in addition to several benefit when compared with conventional practicum process. When data acquisition system is applied, it transformed the practicum process to be fully controlled by PC. Not only as data collection device, PC can also take part as control plant to define set point.

In this final project, the purpose is to develop advanced data acquisition application for existing DC motor speed control, using data logger that connected with network via PC. So that practicum activity can be monitored from different places. Data logger connected to PC and then IP generated in Ethernet that directly connected to local access network (LAN). Later, the results of data processing displayed at PC using Labview graph interface unit (GUI). The IC DAC is placed to create Digital-to-Analog Converter (DAC) circuit for transforming I/O digital channel to analog output port, with Atmega 8535 microcontroller as addition for input interfacing from PC, therefore not only just displayed monitoring for PC but also can define setpoint by software.

Setpoint that can be provided by the user ranged from 0 to 2 $V_{DC.}$ Furthermore, those data used as instruction for for the controller in order to maintain the stability of the system with or without resistance. Result from PID tunning with trial and error method generated PID constanta with value nilai kp= 0,3, ki= 0,01, and kd= 0,001. . From the test results proved that the designed control system capable of maintaining the stability of the motor speed according to the desired setpoint by user. The length of time it takes the program (labview) to be able to move the plant is 6.25 ms. For network delay, takes 96.666 ms between client-server with 0% packet loss.

Keywords: ATmega8535, Local Network, Labview, PC.