

Chapter 6

Position Control

The objectives of this laboratory session are:

1. To design and implement a feedback-controller to control the position of SRV-02 achieving some specific time domain requirements.

6.1 Pre-Lab Assignment

Read this entire chapter as well as the reference [1]. Do the pre-lab calculations in [1]. Keep in mind that

- A disc load will not be attached to the load shaft of your SRV-02.
- Your SRV-02 is in the high-gear configuration.

6.2 Laboratory Procedure

The laboratory procedure consists of two main steps.

1. Wiring the equipment. This will be exactly the same as in Lab 4. Therefore, follow the same steps as in Lab 4.
2. Building and running a QuaRC code using Simulink for position control in SRV-02 system. For this, you can use the MATLAB and Simulink files provided and follow the instructions in Section 5 of [1] with some minor changes. These changes are again due to the difference in our Data Acquisition Card as in the previous lab. You should of course set the various parameters in the MATLAB and Simulink files to values that are consistent with the equipment. For example, “LOAD_TYPE” in the setup should be set to “NONE”.

6.3 In-Lab Assignment and Post-Lab Report

You will follow Section 5 of [1]. Do all calculations, fill all tables, and generate all required figures. Save all of your data and figures. Submit a typed and well-organized lab report to the instructor by the beginning of the next lab session. In your report, explain your reasoning and what you did clearly but concisely.

Bibliography

- [1] Quanser Rotary Experiment #02: Position Control Student Manual.