Recommended Assessment
Pendulum Interfacing

Developing the Pendulum Conventions

1. If the counterclockwise rotations performed did not match the positive rotation conventions of the pendulum model, explain what changes you made, if any, to make the Qube-Servo 3 measurements adhere to the conventions.

2. When applying a small positive voltage to the Qube-Servo 3 follow the expected conventions?

3. Explain what the `Bias` and `Modulus` blocks added are doing.

4. Attach a screenshot of the final behaviour of the Pendulum (deg) scope. Explain any behaviours observed.

5. Attach a screenshot of your finalized model of the qs3_pendulum_interfacing.slx file. Make sure to make the gain blocks big enough to show the values you are using.

Calculating the Model of Inertia

6. Show your work for finding the moment of inertia using the parameters defined in the Qube-Servo 3 User Manual.

Measuring the Model of Inertia

7. Attach the disturbance response in the pendulum position scope and write down the measured number of cycles (n_{cyc}) and duration of the cycles (Δt).

8. Using the pendulum position scope, show work for calculating the moment of inertia using n_{cyc} and Δt.

9. If the values obtained while calculating vs measuring the moment of inertia do not match, give one possible reason why.