



Qube-Servo 3

Hardware Interfacing

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Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

Industry Canada Notice This Class A digital apparatus complies with CAN ICES-3 (A). Cet appareil numérique de la classe A est conforme à la norme NMB-3 (A) du Canada.

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电子信息产品污染控制管理办法 (中国 RoHS)



中国客户 Quanser Consulting Inc. 关于关于限制在电子电气设备中使用某些有害成分的指令 (RoHS)。

CE Compliance

This product meets the essential requirements of applicable European Directives as follows:

- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)

Warning: This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

Qube-Servo 3 – Application Guide

Hardware Interfacing

What is Hardware Interfacing?

Before getting into lab content related to modeling, measuring and controlling the motor in the Qube-Servo 3 device, it is essential to understand how to interface to it. Often, what changes from device to device is the physical characteristics of the device as well as the hardware and software interface to the device. This is a starting point for any hardware experiment.

Background

Prior to starting this lab, please review the following concept reviews (should be located in Documents/Quanser/4_concept_reviews/),

- Concept Review – Modeling & IO → Rotary Sensors (Rotary Encoders Section)

Getting started

The goal of this lab is to get you familiarized with the Qube-Servo 3 hardware. Equipped with a motor, encoder, tachometer and varying loads, it serves as a fundamental system to understand the basics of actuation, sensing, modeling and control. Before you begin this lab, ensure that the following criteria are met.

- If using a physical Qube-Servo 3, make sure it has been setup and tested. See the Qube-Servo 3 Quick Start Guide for details on this step. Make sure the inertia disc load is attached to the Qube-Servo 3.
- If using the virtual Qube-Servo 3, make sure you have Quanser Interactive Labs open in the Qube 3 - DC Motor → Servo Workspace.
- You have the Qube-Servo 3 User Manual. It will be required for some of the exercises.
- You are familiar with the basics of Simulink. See the [Simulink Onramp](#) for more help with getting started with Simulink.

QUARC Software

The QUARC software is used with Simulink to interact with the hardware of the Qube-Servo 3 system. QUARC is used to drive the DC motor and read angular position of the disc. Creating this will be highlighted in the lab procedure. In general, the basic steps to create a Simulink model with QUARC in order to interact with the Qube-Servo 3 hardware are,

1. Make a Simulink model that interacts with your installed data acquisition device using blocks from the *QUARC Targets* library.
2. Build the real-time code.
3. Execute the code.

Type `doc quarc` in MATLAB to access QUARC documentation and demos.