Simulink Quick Start Guide for Windows: Qube-Servo 3

STEP 1	Check Components and Details

Make sure your Qube-Servo 3 Platform includes the following components.

1. Quanser Qube-Servo 3
2. Rotary Pendulum module
3. Inertial disc module
4. 24V, 2.71A power supply and power cable
5. USB A/C cable
6. Qube-Servo 3 Resources. Content and courseware provided in digital form at www.quanser.com/resources

STEP 2	Install and Test QUARC

1. Make sure you have all the required software as listed in the QUARC Compatibility Table included in the installation software and online at www.quanser.com
2. Follow the QUARC Installation Guide for further installation and testing instructions.
3. Make sure the QUARC Sine and Scope Demo successfully runs before continuing.

STEP 3	Set Up the Hardware

The steps below outline the instructions to setup the Qube-Servo 3.

A	Place the Qube-Servo 3 on a flat surface with enough space so that the modules will not be obstructed.

B
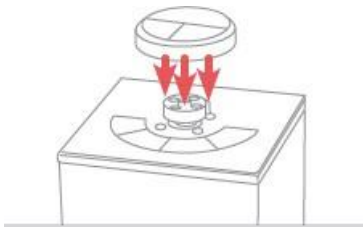
Connect the inertia disc module to Qube-Servo 3 base by aligning the inertia disc magnets with the magnets on the Qube-Servo 3 module connector. The module should snap into place.
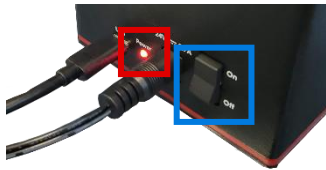
C

First, connect the supplied 24V power supply to the **Power connector** on the Qube-Servo 3 and then to a wall outlet using the included power cable.

Next, connect the **USB C connector** to the Qube-Servo 3 and then to a USB port on your desktop PC or laptop.

D

Move the **power switch** to the On position.

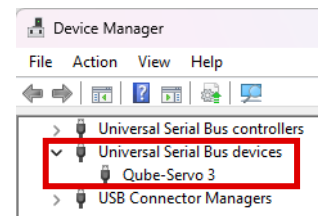The **Power LED** on the Qube-Servo 3 should light up red.

E

If step 2 was done successfully, Windows[1] should automatically detect the presence of the Qube-Servo 3.

F

The **Power LED** on the Qube-Servo 3 should change from red to green and the top LED lights should turn red.

G

Go to Windows Device Manager and verify that the Qube-Servo 3 item appears under the *Universal Serial Bus devices*.

| STEP 4 | Testing the Qube-Servo 3 |

Follow the procedure below to test your Qube-Servo 3 experiment.

A

Make sure your PC and the Qube-Servo 3 are powered ON and connected.

B

1. Download the Qube-Servo 3 **Simulink Technical Resources** and **Simulink Courseware Resources** from www.quanser.com/resources.
2. Extract the **Technical Resources** file to a folder on your local hard drive.

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[1] Windows is a registered trademark of Microsoft Corporation in the United States and other countries.
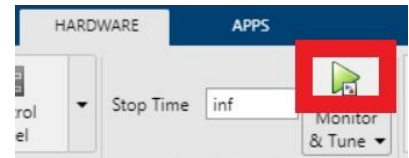
C

Open the Simulink model file (.slx) found in the **Technical Resources\Quick Start\Software** folder on your hard drive.
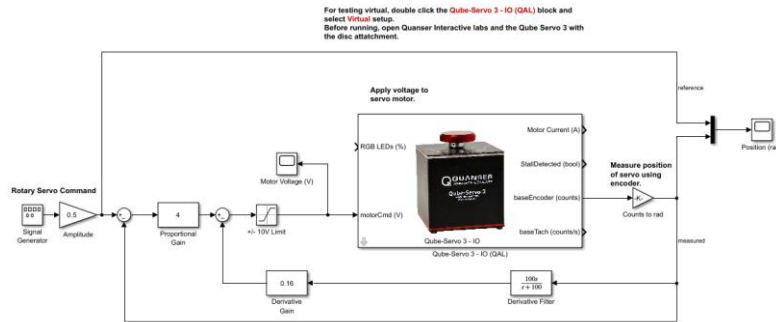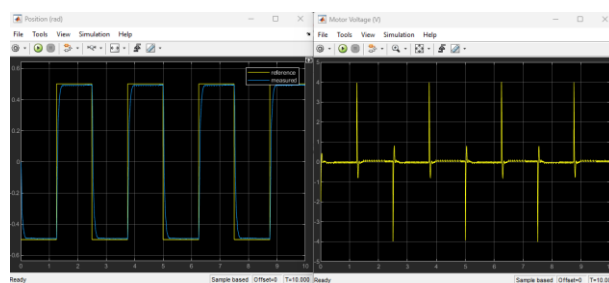

D

Click on the **Monitor & Tune** button under the *HARDWARE* or *QUARC* tab in Simulink to build and run your model in QUARC.
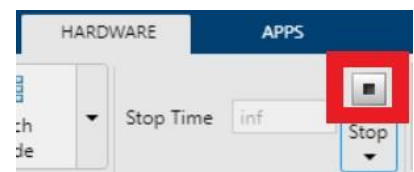

E

The scopes should look like those shown here.

The measured angle (in blue) should be tracking the desired angle (in yellow) in the **Position (rad)** scope. The motor voltage is displayed in the **Motor Voltage (V)** scope. If it is not working, consult the Troubleshooting section at the end of this guide.

F

Click the **Stop** button under the *HARDWARE* or *QUARC* tab to stop the QUARC model.

TROUBLESHOOTING	Review the following recommendations before contacting Quanser's technical support engineers.

Check the connections outlined in Step 3 of this guide and ensure that the cables are connected firmly.

Getting an error when trying to build or run the Quick Start Simulink model	A. Verify that the MATLAB/Simulink and compiler version are compared with your version of QUARC. See the QUARC Software Compatibility table supplied in the QUARC Quick Installation Guide or online at http://www.quanser.com/products/quarc-real-time-control-software/. B. Type **ver** in the MATLAB Command Window and verify that Quanser Real-Time Control (QUARC) is on the list. If not, then go through the QUARC Quick Installation Guide to install QUARC. If it is listed, run mex-setup as described in the QUARC installation guide.

You see 'An operating system specific kernel-level driver for the specified card could not be found' message.	A. Make sure the Qube-Servo 3 is connected to your PC/Laptop with the supplied USB cable to an enabled USB port. B. Ensure the green *Power* LED on the Qube-Servo 3 is lit. If not, confirm that the power supply is operational (i.e., LED is lit) and properly connected. C. Ensure the *qube_servo3_usb* has been selected as the board type in the HIL Initialize block, as outlined in step 5D.
The Motor is not responding.	Ensure the green *Power* LED on the Qube-Servo 3 is lit. If not, make sure the power supply is operational and properly connected.