QUANSER
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Quick Start Guide: Quanser Controls Board

STEP 1 — Required Equipment

To begin your Quanser Controls board setup, collect the following hardware and software:

1. Quanser Controls Board
2. Inertial load
3. Rotary pendulum (*optional*)
4. NI ELVIS III
5. 19 VDC 4.74 A NI ELVIS III Power Supply
6. USB-C Cable

Note: Quick Start VIs as well as student and instructor versions of the courseware are available for download at www.ni.com/teach/Controls.

STEP 2 — Install LabVIEW™ and Add-Ons

Make sure the following versions of LabVIEW™ and required add-ons are installed:

1. LabVIEW™ 2018 or later
2. NI ELVIS III Toolkit
3. LabVIEW™ Real-Time Module
4. LabVIEW™ Control Design & Simulation

Note: Software and documentation for the NI ELVIS III is available for download from www.ni.com/academic/download

STEP 3 — Set Up the Hardware

To set up the Quanser Controls board, follow these instructions. For full details, refer to the User Manual.

A Verify the NI ELVIS III power is off and connect the power adapter.

B Connect the NI ELVIS III to the computer using the USB-C cable.

**C** Ensure that the topboard power button LED is **OFF.**

D

Users with Inertial Load: If your board was only supplied with an inertial load, connect the load module to the base tower by aligning the four inertial load magnets with the magnets on the tower. The inertial load should snap into place.

Users with Optional Pendulum: If your board was supplied with the optional rotary pendulum, connect the pendulum to the base tower by aligning the four pendulum magnets with the magnets on the tower. The pendulum should snap into place. Then connect the pendulum encoder data cable to the pendulum encoder connector.
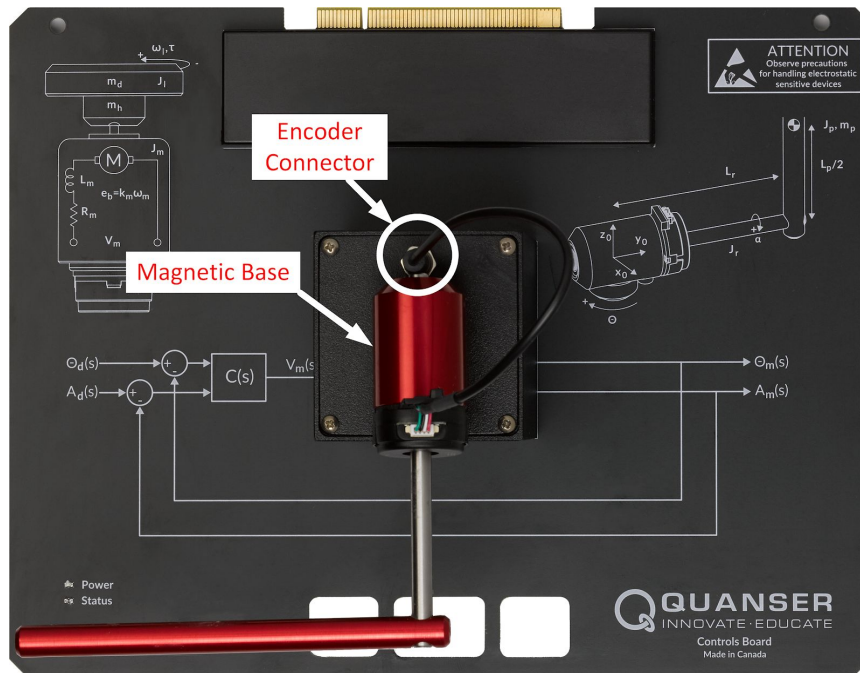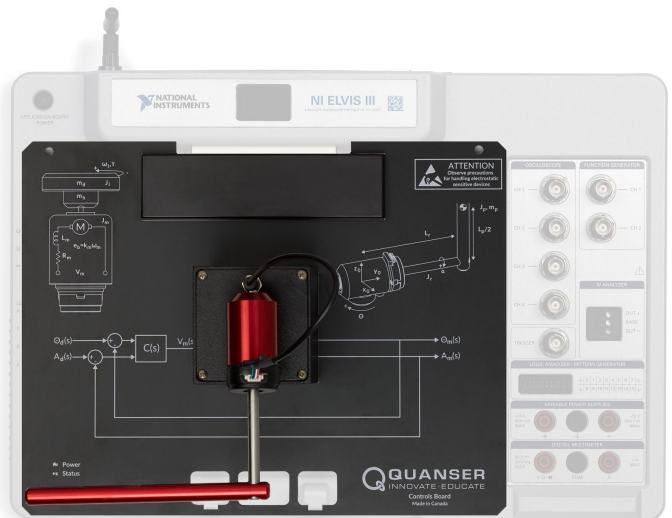

E

Align the PCI connector on the back of the board with the female connector on the NI ELVIS III, slide the board loosely into place.
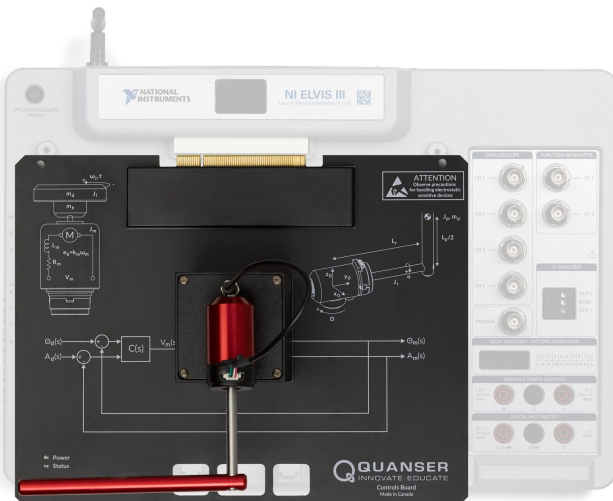
F

Place the handle on the front of the board over the bracket located at the front of the NI ELVIS III. Push the board firmly back until the PCI connector is completely engaged.
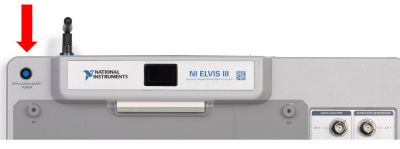
G	Turn on the NI ELVIS III power switch.	
H	Press the board power button and ensure that the button LED is ON.	
I	Verify that the Controls board power LED is ON.	

Test the Quanser Controls board

A Open the LabVIEW project file (*.lvproj) included with the quick start resource package at ni.com/teach/controls. Ensure that the target device is an NI ELVIS III with the IP 172.22.11.2.
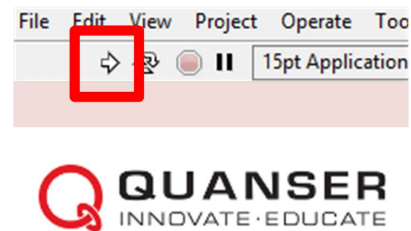
B Right click on the ELVIS III and click connect.

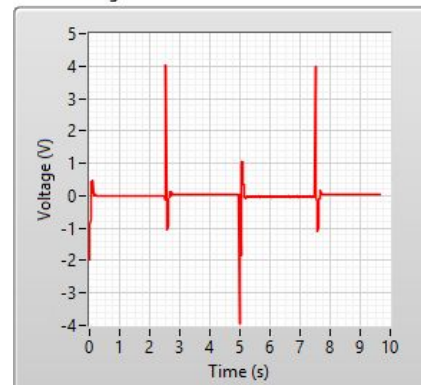**C** Open **Quick Start.vi** and press the arrow button to run the Quick Start VI.

D **If Using the Inertial Load:**
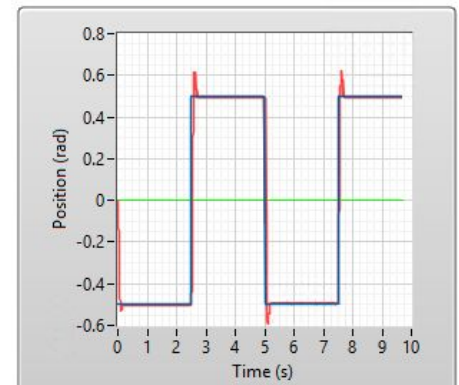The disc will rotate back and forth tracking the reference position.

The waveform charts will display the motor voltage and disc encoder position similar to those shown here.

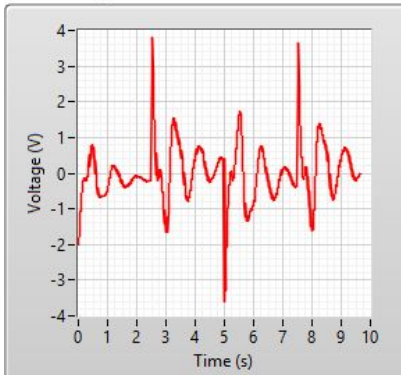The Encoder Position waveform chart will display a 0 signal for the pendulum.
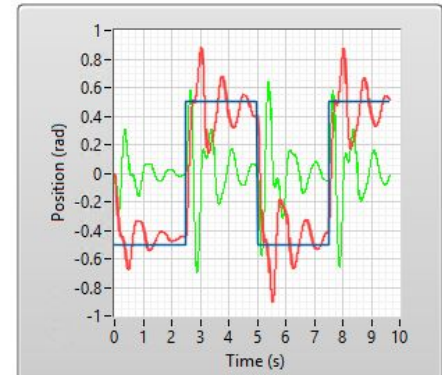
If Using the Optional Pendulum: The pendulum arm will rotate back and forth tracking the reference position, while the pendulum itself will freely swing in a sinusoidal motion.

The waveform charts will display the motor voltage and encoder positions similar to those shown here.

| TROUBLESHOOTING | Review the following recommendations before contacting technical support engineers |

You are getting 'VI Missing' messages	- Make sure the required LabVIEW add-ons listed in Step 2 of the Quick Start Guide are installed. - Verify that the correct LabVIEW version is installed (The ELVIS III is only compatible with LabVIEW 2018 or later).

The Power LED on the application board is not lit	- Ensure that the PCI connector on the Quanser Controls board is properly connected to the female connector on the NI ELVIS III. - Ensure the power switch located on the back panel of the NI ELVIS III is ON. - Ensure the application board power switch located on the top of the NI ELVIS III is ON.

STILL NEED HELP? For further assistance visit ni.com/support