

Quick Start Guide: Mechatronic Systems Board

STEP 1 Required Equipment

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



1. Quanser Mechatronic Systems Board
2. NI ELVIS III
3. 19 VDC 4.74 A NI ELVIS III Power Supply
4. 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/systems.



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. LabVIEW™ Real-Time Module
3. LabVIEW™ FPGA Module
4. NI Vision Acquisition Software
5. NI Vision Development Module
6. NI ELVIS III Toolkit

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 Mechatronic Systems board, please read the following instructions carefully. For full details, see the product 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

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.



E

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.



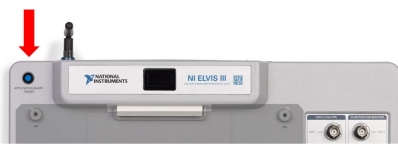
F

Turn on the NI ELVIS III power switch.



G

Press the board power button and ensure that the button LED is ON.



H

Verify that the Mechatronic Systems board power LED is ON.



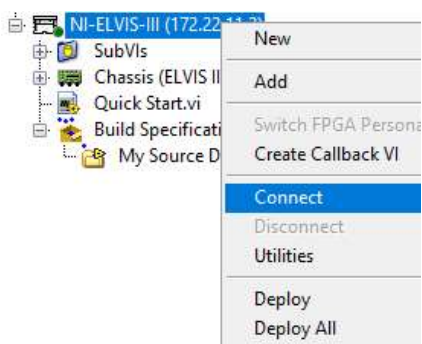
STEP 4 Test the Quanser Mechatronic Systems board

A

Open the LabVIEW project file (*.lvproj) included with the quick start resource package at ni.com/teach/mechsystems. Ensure that the target device is an NI ELVIS III with the IP 172.22.11.2.

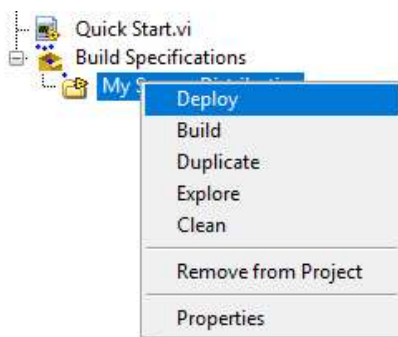
B

Right click on the ELVIS III and click connect



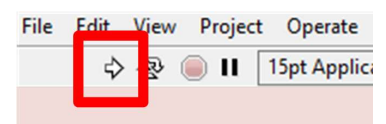
C

Right click on **My Source Distribution** and select **Deploy**



D

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



E

Wait for the calibration to complete and the **Calibration LED** to light



E

The end-effector should begin to trace a square path surrounding the central nine fiducial markers. When the path reaches the calibration marker shown below, the camera should identify it in the **Camera Image** window, and **# of Matches** should be one.

Camera Image



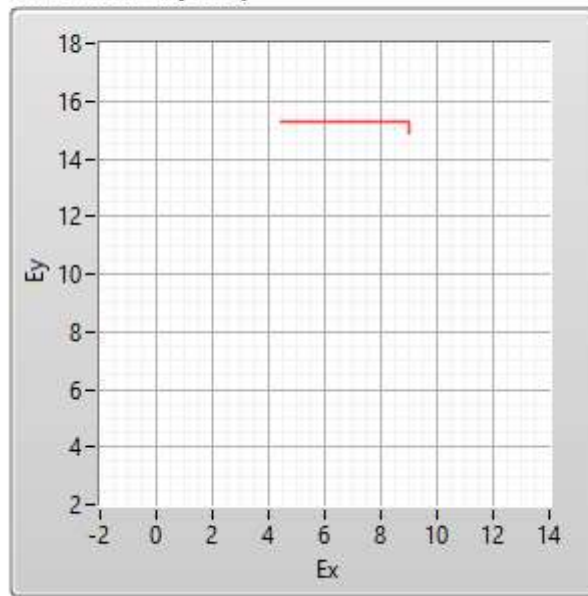
Template



of Matches



End-effector Trajectory



Cannot connect to NI ELVIS III

- Check that the USB C cable is properly connected and that the NI ELVIS III appears in your device manager.
- Check that the NI ELVIS III is visible in NI MAX and that it is connected via USB C.
- Ensure that the NI ELVIS III is at the correct IP address in NI MAX. If the IP address does not match the format 172.22.11.xxx check that the NI ELVIS III is not configured to connect via ethernet.
- For more information on other methods for connecting to the NI ELVIS III please consult the NI ELVIS III documentation.

Onboard Power LED is not lit

- Check that the NI ELVIS III has power and is turned on.
- Check that the blue LED on the board power button on the NI ELVIS III is lit. If not, press the button firmly.
- Check that the board is firmly seated in the PCI connector on the NI ELVIS III. Ensure that the hooks on the bracket at the handle of the board are over the board and the board is as far towards the back of the NI ELVIS III as is physically possible.

Calibration LED does not light

- Check that the assets for the Mechatronic Systems board are deployed. Right click on **My Source Distribution** in the project and select **Deploy**.
- Check that the camera is focused. Click the **Enable Motion** button to disable the motors. Position the camera above a marker, and turn the manual focus ring on the camera until the image is clear.
- Make sure that no images or other items are on the board blocking the camera view of the markers on the surface of the PCB.

Motors do not move

- Check that the board power LED is lit.
- Stop the VI and ensure that the arms can move freely.
- Stop the VI and scroll down in the front panel to show the **Error Out** indicator which is located directly below the Brushed DC Motor Current plot. If there is an error, you can right click on the error indicator and select “explain warning” for help.

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