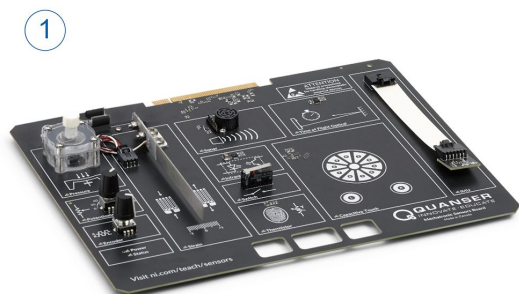# QUANSER
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Quick Start Guide: Mechatronic Sensors Board

STEP 1   Required Equipment

To begin your Quanser Mechatronic Sensors Board setup, collect the following hardware and software:

1. Quanser Mechatronic Sensors Board
2. Luer lock syringe
3. NI ELVIS III
4. 19 VDC 4.74 A NI ELVIS III Power Supply
5. 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/sensors.

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. LabVIEWTM Real-Time Module
3. NI ELVIS III Toolkit

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

To set up the Quanser Mechatronic Sensors Board, please read the following instructions carefully. For full details, see the product User Manual.
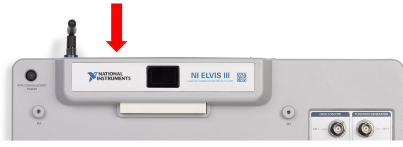
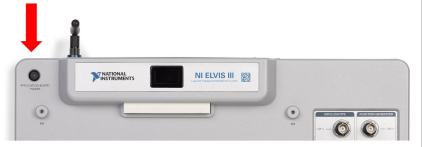**A** Verify the NI ELVIS III power is OFF and connect the power adapter.

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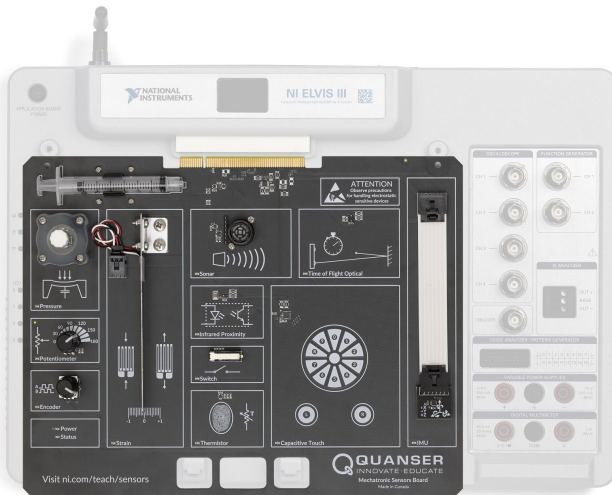

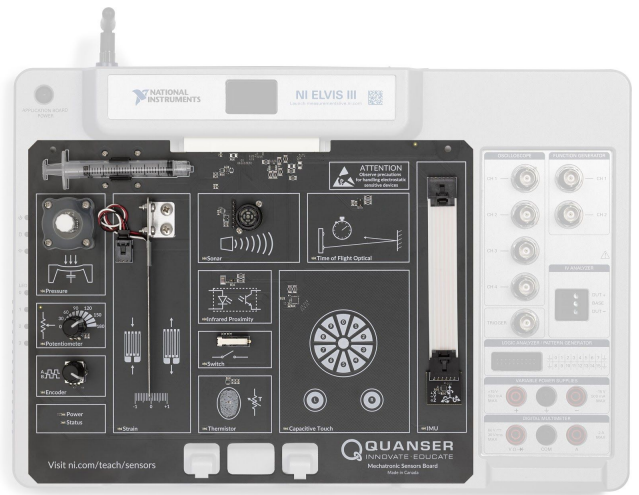**C** Ensure that the topboard power button LED is OFF.

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 Sensors Board power LED is ON.

I

Unscrew and remove the protective cap from the pressure sensor chamber.

Attach the syringe to the Luer lock connector on the pressure sensor chamber by gently twisting the syringe in the **clockwise** direction. Ensure a secure connection is made.
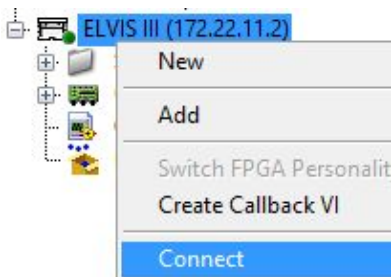

STEP 4   Test the Quanser Mechatronic Sensors Board

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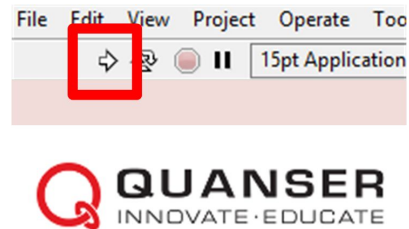

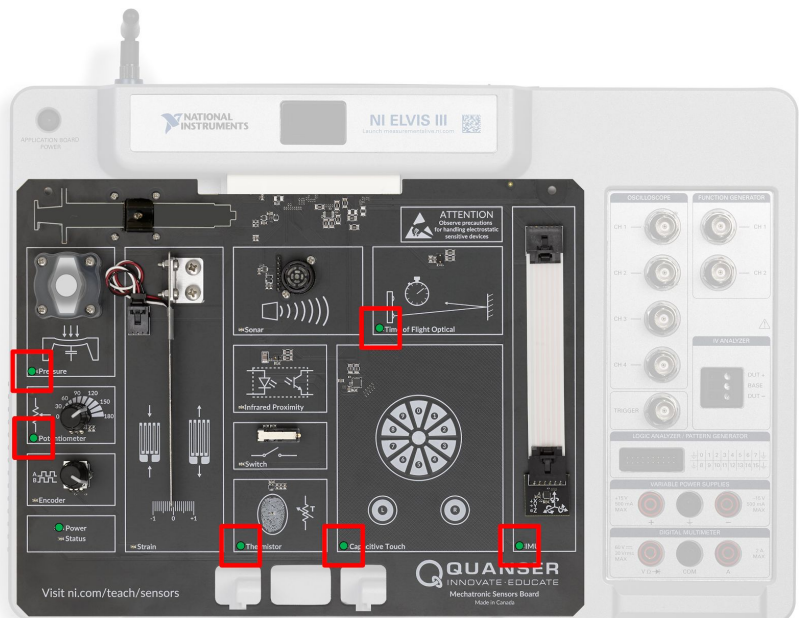**B**   Right click on the ELVIS III and click connect.

ELVIS III (172.22.11.2)
- New
- Add
- Switch FPGA Personalit
- Create Callback VI
- **Connect**

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

File   Edit   View   Project   Operate   Too
⇨   ⇨   ●   II   15pt Application

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D   Verify the LEDs for the following individual sensors are ON:

- IMU
- Capacitive Touch
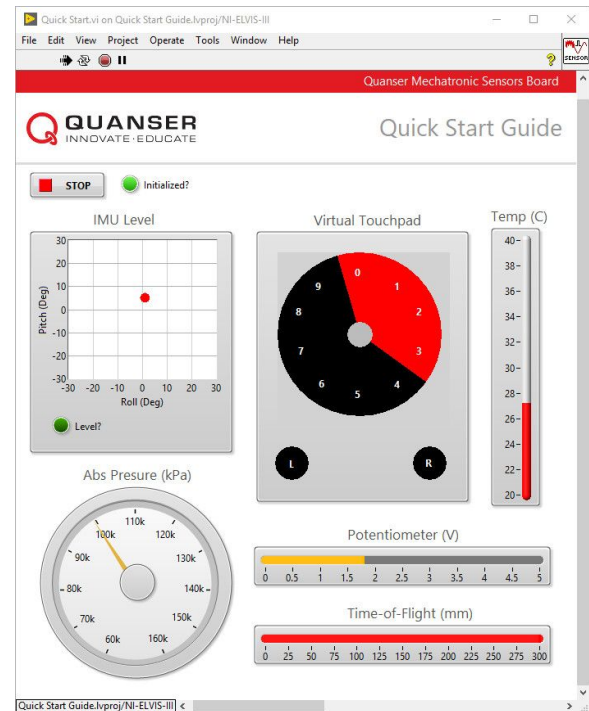- Thermistor
- Potentiometer
- Pressure
- Time-of-Flight

E

Wait for the *Initialized?* LED in the front panel to turn ON. Apply an input to the sensors listed below:

- **IMU:** Hold the IMU sensor and attempt to level it by maintaining 0 degree pitch and roll angles. Once leveled the *Level?* LED in the front panel will turn on.
- **Capacitive Touch:** Scroll your finger along the 10-segment virtual scroll pad and observe how each segment turns ON. Similarly, tap the left and right buttons of the virtual touchpad.
- **Thermistor:** Place your finger on the thermistor and observe the temperature of your fingertip (Note: your fingertip temperature must be greater than 30 °C).
- **Potentiometer:** Rotate the potentiometer and observe changes in output voltage.
- **Pressure:** Apply positive and negative pressures to the transducer using the syringe plunger.
- **Time-of-Flight:** Move your hand above the sensor and observe the measured distance in mm.

Click on the **STOP** button to stop running the VI. The sensor-specific LEDs should all turn off.

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 Mechatronic Sensors 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