

MECHATRONIC SENSORS TRAINER

Empower your students with industry-relevant mechatronic design skills, and accelerate project-based learning

The Mechatronic Sensors Trainer is an innovative sensors teaching solution for use in your mechatronics courses. The compact device includes a rich suite of distance, motion, environmental, light, force, and touch sensors, allowing your students to not only learn the fundamental workings of these sensors, but also develop key skills in component selection and making design decisions for complex measurement and perception systems. This solution is ideal for teaching undergraduate mechatronics, and is accompanied by comprehensive fundamentals labs, integrated challenges, as well as industry relevant open-ended projects.

With the ability to provide real-time measurements, the Mechatronic Sensors Trainer can be integrated into larger systems or used to enhance the functioning capabilities of other Quanser systems such as the QBot Platform and QCar 2. In addition, this device can also be used to measure and store data asynchronously for offline processing at a later time.

The complete Mechatronics Design Lab features the Sensors Trainer alongside the Mechatronic Actuators Trainer, for a comprehensive and exploratory understanding of hardware interfacing for undergraduate education.

Features



Course-ready

Comprehensive fundamentals labs, integrated challenges and industry relevant open-ended projects



Project-ready

Variety of distance, motion, light, environment and force sensors and I/O for rapid prototyping



Outreach-ready

Intuitive user experience and interface in a compact unit promote interactive STEM education



Lab-ready

Cost-effective pricing and bundle options allow session-wide deployment across a course

Courseware

Fundamentals Labs

Sensors fundamentals labs covering the workings of different types of sensors, data acquisition and processing, as well as component selection

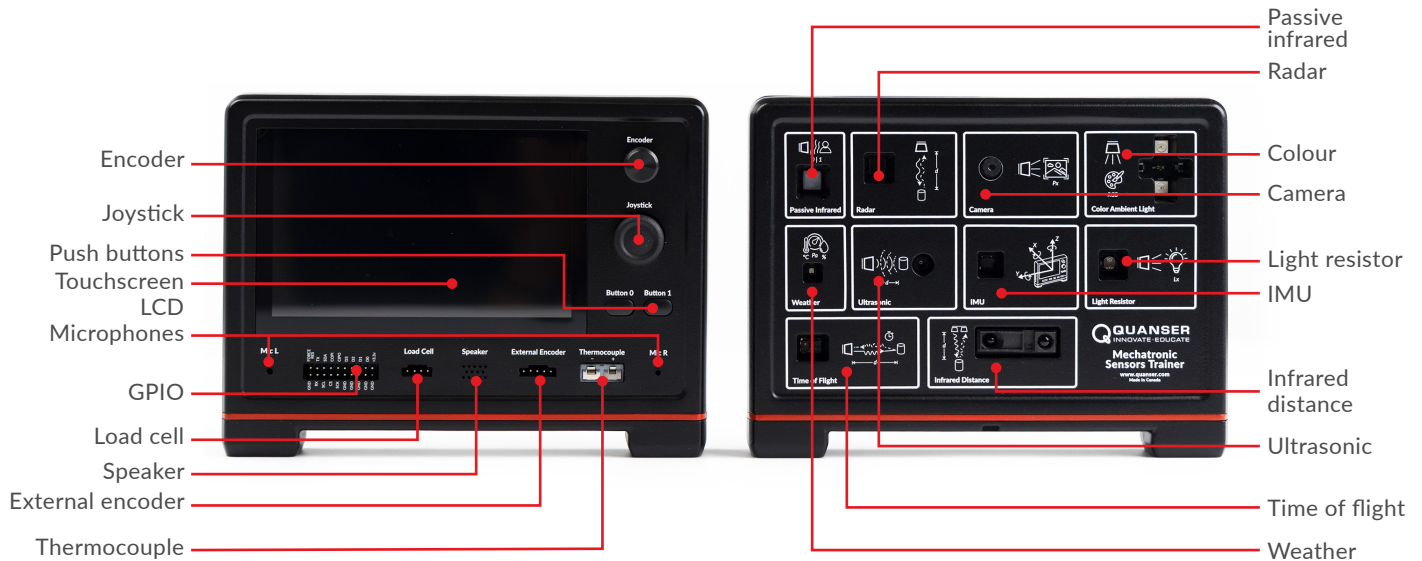
Integration Challenges

Guided challenges developing design intuition for complex measurement and perception systems, using a variety of sensors together

Projects

Industry-relevant open-ended projects with the Mechatronic Actuators Trainer, such as a mobile robot, smart home system, etc.

Product Details*



Device Specifications*

Dimensions	18 cm x 13 cm x 3 cm
Connection Interface	USB, SD Card
Sensors	<ul style="list-style-type: none"> • Passive infrared sensor for motion detection • Multi-object 60GHz pulsed coherent radar system • Reflective Infrared distance module • Multi-object ultrasonic distance sensor • 64 zone time of flight distance sensor • Camera • Color sensor w/ RGB/ambient/optical-IR ranges and 4x RGB/IR LEDs • Ambient light dependent resistor • Nine axis IMU w/ accelerometer, gyroscope and magnetometer • Weather module with pressure, temperature and humidity • Encoder knob w/ 24 pulses per rev • Joystick w/ two analog axis and button • 2x configurable push buttons • 800 x 480 touchscreen LCD w/ 10-finger multitouch interface • Dual microphones, and speaker
External Sensor Interface	Load cell connector Header – Serial/SPI/I2C, 4 GPIO, force sensing resistor Thermocouple connector Encoder connector w/ 32-bit quadrature decoding
External Sensors provided	Load cell Force sensing resistor Thermocouple
Language support	Python / C / MATLAB / Simulink

* Subject to change

About Quanser:

Quanser is the world leader in education and research for real-time control design and implementation. We specialize in outfitting engineering control laboratories to help universities captivate the brightest minds, motivate them to success, and produce graduates with industry-relevant skills. Universities worldwide implement Quanser's open-architecture control solutions, industry-relevant curriculum, and cutting-edge workstations to teach introductory, intermediate, or advanced controls to students in Electrical, Mechanical, Mechatronics, Robotics, Aerospace, Civil, and various other engineering disciplines.

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