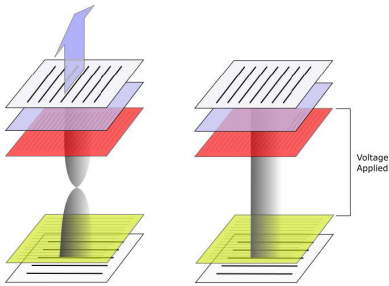


QNET MECHATRONIC INTERFACING BOARD FOR NI ELVIS

Demonstrate the fundamentals of microcontroller I/O and inter-device communication, using NI ELVIS platform and LabVIEW™ software.

TEACH FUNDAMENTALS OF EMBEDDED SYSTEMS

Typical introductory mechatronics course cover topics such as micro-processor architecture, and inter-device communication. The QNET Mechatronic Interfacing board is an ideal tool to expose students to basic principles and applications of embedded systems. Designed exclusively for NI ELVIS platform and LabVIEW™ software, students learn how to control the microcontroller at the register level, and interact with sensors and other system components using industry communication standards.



The LCD courseware chapter introduces students to LCD technology, and covers topics such as image data, image manipulation, processing and analysis.

HOW IT WORKS

The QNET Mechatronic Interfacing board consists of a dsPIC33E microcontroller, SPI and I²C devices, such as temperature, proximity and acceleration sensors, memory chips, keypad and touch screen interface devices, and external communication ports for UART and CAN. The internal registers of the PIC can be modified in real time to control the behaviour of the entire system without requiring re-flashing of firmware.



Using the QNET Mechatronic Interfacing board, students learn fundamentals of microcontrollers and interfacing to sensors and display peripherals.



NI Part No. 784533-01

System specifications on reverse page.

QNET MECHATRONIC INTERFACING WORKSTATION COMPONENTS

- QNET Mechatronic Interfacing board
- NI ELVIS II or ELVIS II⁺
- Course resources with comprehensive lab exercises, fully documented system models, and pre-designed VIs

ACCELERATE DISCOVERY WITH NI ELVIS PLATFORM

The NI Educational Laboratory Virtual Instrumentation Suite (NI ELVIS) presents a modular teaching platform suitable for any engineering lab. Integrating 12 most commonly used instruments, including an oscilloscope, digital multimeter, function generator, dynamic signal analyzer in one device allows for quick and easy measurement, design and prototyping in an educational laboratory setting.

BUILD A COMPLETE MECHATRONICS LAB

Four Quanser add-on boards for NI ELVIS cover arguably the most important technical hardware-focused skills in mechatronics: sensing, actuation, inter-device communication and integration of these concepts in an actual mechatronic system. With the QNET Mechatronics board family, you can give students a great lab experience and prepare them to take on high fidelity mechatronic application and design challenges.

QNET Mechatronic
Sensors



QNET Mechatronic
Actuators



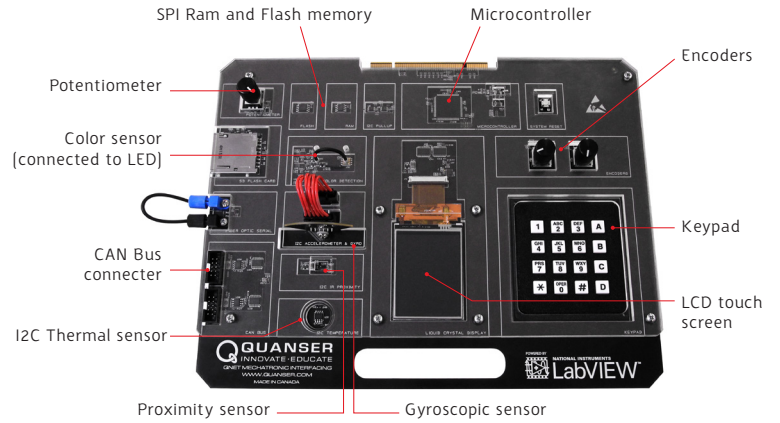
QNET Mechatronic
Systems



For the full range of Quanser QNET boards, visit www.quanser.com

SYSTEM SPECIFICATIONS

QNET 2.0 MECHATRONIC INTERFACING BOARD



FEATURES

- dsPIC33e microcontroller with ADC, SPI and I²C interfaces, UART and input capture
- Two position encoders
- Analog input signal generation via potentiometer
- Keypad and touch screen for user interface
- LCD screen and tri-colour LED for display
- Colour sensor, connected to LED via fiber-optic cable
- I²C accelerometer, gyroscope, thermometer, and IR range detector
- SPI RAM and Flash memory chips
- SD card slot with SPI interface
- Fiber-optic serial I/O connected to UART
- Two external CAN bus connectors with SPI CAN controller chips and built-in termination resistance
- Built-in PCI connector for NI ELVIS II /ELVIS II+ for quick and easy lab setup
- Fully compatible with LabVIEW™
- Fully documented system models and parameters provided for LabVIEW™
- Comprehensive digital course resources
- Additional community-created resources available on www.QuanserShare.com

COURSEWARE TOPICS COVERED

- Microcontroller I/O
- Hardware control registers
- Data storage in flash and RAM
- SPI and I²C communication
- CAN busses and inter-device communications
- User I/O, controls and displays
- Hardware integration

DEVICE SPECIFICATION

SPI RAM capacity	64 kB
Flash capacity	64 Mb (32 Mb reserved)
Encoder resolution	24 pulses/rev
Temperature sensor max. sensitivity	0.0625 °C
Accelerometer max. scale	± 8 g
Accelerometer granularity	12 bits
LCD colour depth	18 bits
Touch sensor granularity	16 bits
Gyroscope granularity	32 bits
CAN bus termination resistance	120 Ω
CAN transceiver voltage	5 V
Colour sensor max. output frequency	600 kHz

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 succeed and produce graduates with industry-relevant skills. Universities worldwide implement Quanser's open architecture control solutions, industry-relevant curriculum and cutting-edge work stations to teach Introductory, Intermediate or Advanced controls to students in Electrical, Mechanical, Mechatronics, Robotics, Aerospace, Civil, and various other engineering disciplines.