

QUANSER Q1-cRIO DATA ACQUISITION AND CONTROL MODULE

The Quanser Q1-cRIO is a C series module for the National Instruments CompactRIO controller. Designed specifically for controls education, it enables easy interface with Quanser control experiments.

SIMPLER INTERFACING AND FASTER CONNECTIVITY

The Q1-cRIO data acquisition and control module provides a convenient set of inputs and outputs via plug and play connectors, enabling you to set up your lab workstations quickly, right out of the box. The Q1-cRIO is driven by Quanser Rapid Control Prototyping (QRCP) toolkit for LabVIEW™, which makes development of powerful control algorithms for NI cRIO straightforward and efficient. Pre-developed control VI's based on QRCP are provided with each Quanser experiment. As a result, students can speed up their programming and have more time available for high level learning.

HOW IT WORKS

The Q1-cRIO data acquisition and control module has one analog input, one analog output, and two configurable, single-ended encoder input interfaces. This configuration minimizes the need for additional equipment.

All inputs and outputs are accessed simultaneously using unbuffered single-point reads and writes, a requirement for real-time control applications.

Plug and play connectors and provided custom cables allow for fast, error-free setup of controls workstations.

QRCP supports four Q1-cRIO configurations, i.e. using NI CompactRIO with one, two, three or four Q1-cRIO modules. This allows you to interface with a wide range of Quanser control experiments used for teaching and research.

The Quanser Q1-cRIO, when driven by QRCP, provides hardware velocity estimation, resulting in controllers with greater stability.

The Quanser Q1-cRIO module can only be used with the NI cRIO-9024 controller with cRIO-9113 or cRIO-9114 chassis, or NI cRIO-9074 controller.



NI Part No. 782689-01

See system specifications on reverse.

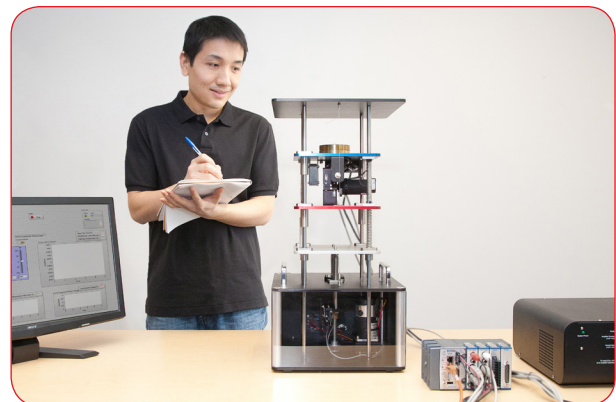
QUANSER - NI cRIO-BASED PLATFORM COMPONENTS

Quanser control experiment with amplifier

Up to four Q1-cRIO data acquisition and control modules*

NI CompactRIO system*

Quanser Rapid Control Prototyping (QRCP) software for NI LabVIEW™



A turn-key Active Suspension workstation with a NI cRIO and two Quanser Q1-cRIO modules. For a complete list of Quanser control experiments compatible with NI cRIO, contact info@quanser.com

SYSTEM SPECIFICATIONS

Q1-cRIO Module



FEATURES

- Fully supported by QRCP toolkit for NI LabVIEW™
- QRCP fixed FPGA personality supports one to four Q1-cRIO modules
- Unique combination of I/O:
 - 1x analog in
 - 1x analog out
 - 2x encoder inputs
- Plug and play connectors and cables
- Hardware velocity estimation from encoder counts, improved slow speed estimation

DEVICE SPECIFICATION

| | |
|---|--|
| DC power input voltage range | 9.0 V - 30 V DC |
| Input power (fully loaded) | 2000 mW |
| Encoder counter size | 24 bits |
| Encoder velocity counter size | 24 bits |
| Encoder maximum 4x quadrature frequency (no filter) | 20 MHz |
| Analog output resolution | 16 bits |
| Analog output default voltage range | ± 10 V |
| Analog output configurable voltage ranges | ± 5 V, ± 10 V, ± 10.8 V, + 5 V, + 10 V, + 10.8 V |
| Analog output typical slew rate | 3.5 V/μs |
| Analog output typical output noise | 80 μV RMS |
| Analog input resolution | 16 bits |
| Analog input default voltage range | ± 10 V |
| Analog input maximum input voltage | ± 15 V |
| Analog input configurable voltage range | ± 5 V, ± 10 V |
| Analog input typical input impedance | 1 MΩ |
| Analog input typical signal to noise ratio (±10 V) | 90 dB |
| CompactRIO compatibility | NI cRIO-9024 controller with cRIO-9113 or cRIO-9114 chassis NI cRIO-9074 controller |

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 work stations to teach Introductory, Intermediate or Advanced controls to students in Electrical, Mechanical, Mechatronics, Robotics, Aerospace, Civil, and various other engineering disciplines.