

## QUANSER RAPID CONTROL PROTOTYPING FOR NI LABVIEW™

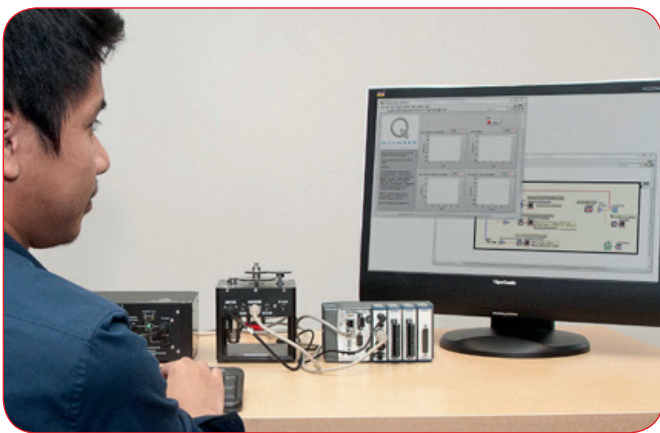
The Quanser Rapid Control Prototyping (QRCP) is a software add-on for NI LabVIEW™ that significantly simplifies access to Quanser control experiments, and makes control design programming in LabVIEW easier and faster.

### FASTER CONTROL DESIGN AND SIMPLER CONNECTIVITY

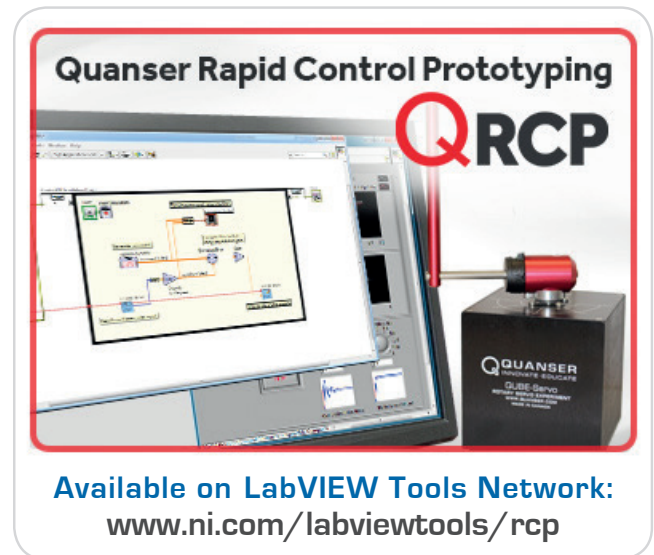
The Quanser RCP add-on for the NI LabVIEW graphical development environment is a powerful control design tool that spans the spectrum of design, from simulation to control implementation. It significantly simplifies access to Quanser control experiments by taking care of all standard low level software and hardware configurations. The resulting VIs are clear and match standard system block diagrams, helping bridge the gap between theory and practical implementation.

QRCP adds the ease of use and speed of development to control design programming in LabVIEW, significantly shortening the controller development cycle, and expanding capabilities of the NI LabVIEW Control and Simulation Module. With expanded compatibility and support for NI myRIO, CompactRIO, and PXI, you can teach and perform advanced control research using LabVIEW environment.

QRCP supports most Quanser experimental plants, including the QUBE™-Servo, rotary and linear motion control systems, 2 DOF and 3 DOF Helicopters, and more. For details, visit [www.quanser.com/ni-quanser](http://www.quanser.com/ni-quanser).



A turn-key workstation with the with QRCP shown here includes a Quanser Rotary Servo experiment, amplifier and NI CompactRIO controller with Quanser Q1-cRIO module.



### HOW IT WORKS

QRCP is comprised of a set of VI's that simplify many common controls, robotics and mechatronics programming tasks. These include hardware interfacing, inter-controller communications and porting control code between control hardware.

Hardware access is achieved with a set of three hardware-independent, preconfigured HIL interface VI's: HIL Initialize, HIL Read and HIL Write. By abstracting hardware access in this way, the controller development cycle is shortened. Porting your control code between your host and target systems is as simple as selecting a new I/O configuration, a process which can be accomplished in a few seconds.

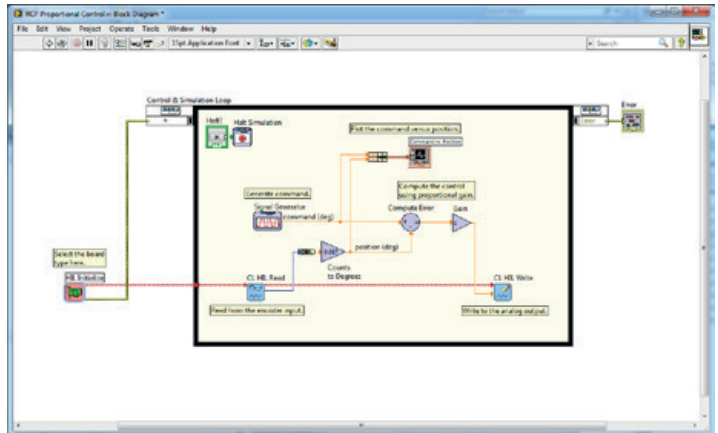
All of the outputs controlled by the QRCP VI's are zeroed when the controller is stopped, whether it was stopped appropriately or aborted unexpectedly. This supervisory safety feature is crucial in an undergraduate teaching laboratory environment where students may be unfamiliar with proper programming practices.

A set of VI's within QRCP greatly simplifies inter-controller communications required for distributed control. Researchers and educators can switch between protocols such as TCP/IP, UDP, shared memory or RS232, via one menu within the Stream Server and Stream Client VI's.

# SYSTEM SPECIFICATIONS

## Quanser Rapid Control Prototyping (QRCP)

for NI LabVIEW™



### FEATURES

- Access hardware through a set of hardware independent, preconfigured VIs
- Target NI myRIO, NI CompactRIO and PXI Windows-based platform with a single VI
- Outputs are safely zeroed when VI is stopped or aborted
- Stream VI's support the following communications protocols: TCP/IP, UDP, shared memory, serial, pipe, and file
- Supports over 20 data acquisition boards from both National Instruments and Quanser
- Supports majority of Quanser experimental plants

### QRCP 2016 SYSTEM REQUIREMENTS

Supported host system	32- or 64-bit Microsoft Window 7, Windows 8.1, and Windows 10
Supported target system	NI myRIO-1900 NI myRIO-1950 NI cRIO-9024 with NI cRIO-9113 or NI cRIO-9114 Chassis NI cRIO-9074 PC or PXI running 32 or 64-bit Microsoft Window 7, Windows 8.1, or Windows 10
Software requirements	32 bit LabVIEW 2015 SP1 or LabVIEW 2016 LabVIEW Control Design and Simulation Module NI Device Drivers (i.e. NI-DAQmx) <sup>1</sup> Reconfigurable I/O (RIO) Feature <sup>2</sup> Real-time and Embedded Feature <sup>2</sup> LabVIEW myRIO Toolkit <sup>3</sup> LabVIEW MathScript RT Module (only used in certain curriculum VIs)

<sup>1</sup> Required for NI cRIO and Windows targets

<sup>2</sup> Required for NI cRIO targets

<sup>3</sup> Required for NI myRIO targets

**QRCP NOW AVAILABLE ON LABVIEW TOOLS NETWORK [WWW.NI.COM/LABVIEWTOOLS/QRCP](http://WWW.NI.COM/LABVIEWTOOLS/QRCP)**

#### 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.