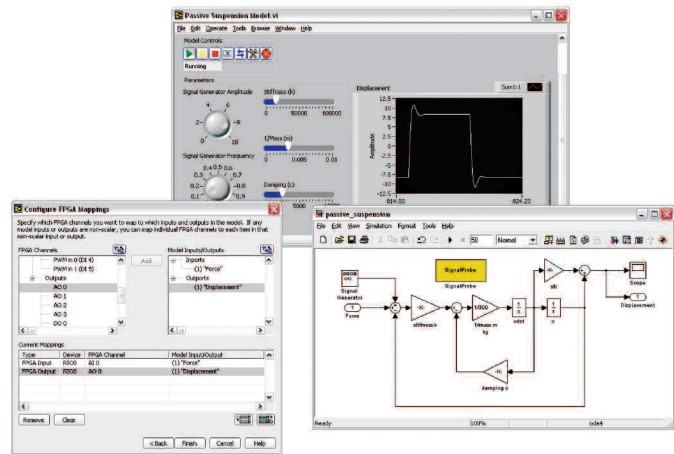


Simulation Tools for LabVIEW

NI LabVIEW Simulation Interface Toolkit

- Quickly create custom LabVIEW user interfaces to interactively verify models created in The MathWorks, Inc. Simulink® software
- Import your models into LabVIEW with automated code generation
- Rapidly build controller prototypes on PXI and NI CompactRIO real-time hardware
- Easily add data acquisition, CAN, and FPGA I/O through configuration-based dialogs
- Interface models with any I/O using LabVIEW and simulate any signal using off-the-shelf hardware



Overview

The National Instruments LabVIEW Simulation Interface Toolkit gives control system design and test engineers a link between NI LabVIEW and Simulink software. With this toolkit, you can create powerful user interfaces for models developed in Simulink and implement the models on real-time hardware platforms with real-world I/O. In addition, the toolkit provides a plug-in to The MathWorks, Inc. Real-Time Workshop® to import your models created in the Simulink environment into LabVIEW. By importing these models into LabVIEW, you can then integrate them with a wide variety of I/O. With these features, you can easily transition from software algorithm verification to real-world prototyping using the same user interface.

Verify Models with a LabVIEW User Interface

The NI LabVIEW Simulation Interface Toolkit gives you tools to build custom user interfaces for Simulink models. The built-in SIT Connection Manager offers a high-level utility to connect a custom LabVIEW user interface with your models, eliminating the need for any programming. With the custom user interface, you can easily simulate, analyze, and verify your control model on a desktop PC. Through this utility, creating custom user interfaces for your simulation model is now a simple four-step process.

Step 1. The LabVIEW Simulation Interface Toolkit adds a SignalProbe block to the Simulink Explorer window. Simply drop the SignalProbe in your model once in the Simulink environment so LabVIEW can access all signals and parameters.

Step 2. Next, create a custom LabVIEW user interface with the extensive library of built-in user interface objects available in LabVIEW.

Step 3. Using the SIT Connection Manager, connect the controls and indicators on the LabVIEW user interface to the parameters and signals from within your model.

Step 4. Run the LabVIEW application and analyze the behavior of the model.



Figure 1. Deploy models to Real-Time PXI or CompactRIO hardware

Deploying Models to Real-Time Hardware

You can also import the model into the LabVIEW environment with the LabVIEW Simulation Interface Toolkit (requires Real-Time Workshop software). The toolkit includes a plug-in for Real-Time Workshop that automatically compiles the model into a DLL that you can deploy to a real-time system. By simply selecting a menu option to target a real-time system, you automatically download the necessary files for running the model while maintaining the custom LabVIEW user interface previously created. This seamless transition preserves the work used to create the user interface while providing a solid real-time architecture for your system. To download the simulation model, choose from a variety of

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LabVIEW Real-Time targets such as real-time PXI systems or rugged CompactRIO embedded systems. With the model running on real-time hardware, you can create control prototypes and hardware-in-the-loop test systems.

Interfacing Models with Real-World Signals

Using the SIT Connection Manager, you can configure the real-world I/O that will be the inputs and outputs of the simulation model. You can choose to connect signals and parameters to NI data acquisition devices, FPGA devices, and CAN devices through configuration dialogs. Once you have finished selecting the I/O, LabVIEW generates the code that instruments the model with real-world I/O signals. Because LabVIEW is an open environment, you can add your own code to interface to any I/O or do custom signal analysis.

Required Software

To use the LabVIEW Simulation Interface Toolkit, you must be a properly licensed user of The MathWorks, Inc. MATLAB®/Simulink application software and Real-Time Workshop release 13.x, 14.0-14.3, or R2006a; Microsoft Visual C++ 6.0 or Microsoft Visual C++ .NET 2003; and LabVIEW Version 7.1 or later.

Ordering Information

NI LabVIEW Simulation Interface Toolkit.....778552-03

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For complete product specifications, pricing, and accessory information, call (800) 813 3693 (U.S.) or go to ni.com/simulation.

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