Requirements and Compatibility | Ordering Information
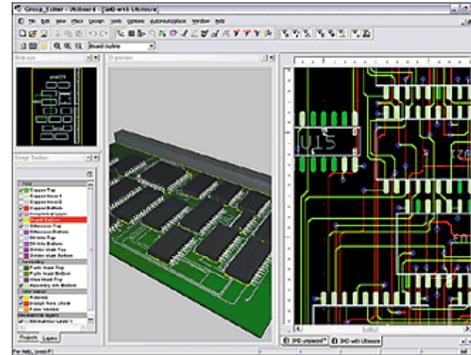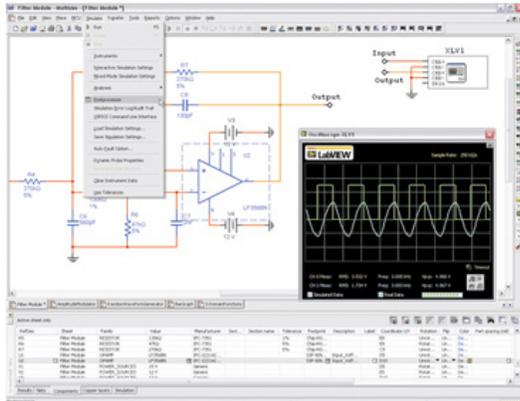*For user manuals and dimensional drawings, visit the product page resources tab on ni.com.*

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Integrated Design and Test Platform with NI Multisim, Ultiboard, and LabVIEW

NI Circuit Design Suite – Multisim and Ultiboard

Overview

Combining the powerful design capabilities of NI Multisim capture and simulation software, the flexible routing of NI Ultiboard software, and the industry-leading graphical programming of NI LabVIEW software, the NI Circuit Design Suite provides an innovative platform that integrates the design and test of board-level circuits (Figure 1). You can improve productivity by using this completely streamlined design flow to quickly define and prototype your circuit designs. As engineering schedules shorten, and budgets tighten, you need to be able to use powerful design tools to quickly prototype error-free circuits. Integration throughout the design flow, from design simulation to prototype validation, can ensure your success.

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Requirements and Compatibility

OS Information

Windows 2000/XP
Windows 7
Windows Vista 64-bit

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Application and Technology

Multisim Capture and Simulation

Intuitive and easy-to-use capture environment
Dynamic visualization of design behavior
Interactive circuit simulation and industry-standard analysis capabilities
Database of more than 16,000

Ultiboard Layout and Routing

Flexible design environment for intuitive layout
Efficient control of parts and copper placement
Ability to export to industry-standard formats (Gerber, DXF)

Integrated Design and Test

Multisim design integrated with LabVIEW test
Correlate simulated and real measurements
Automate Multisim simulation in LabVIEW

Best Practices in Circuit Design

With this unique design platform, you can take advantage of advanced features within the easy-to-use and graphical Multisim environment. You can use design validation in the earliest stages of the design flow to reduce errors and prototype iterations.

Multisim integrates with National Instruments measurement technology within a single design platform, so you can effectively use simulation and real measurements to more accurately characterize performance. With such an advanced approach, you can proactively, rapidly, and cost-effectively improve your design and design productivity.
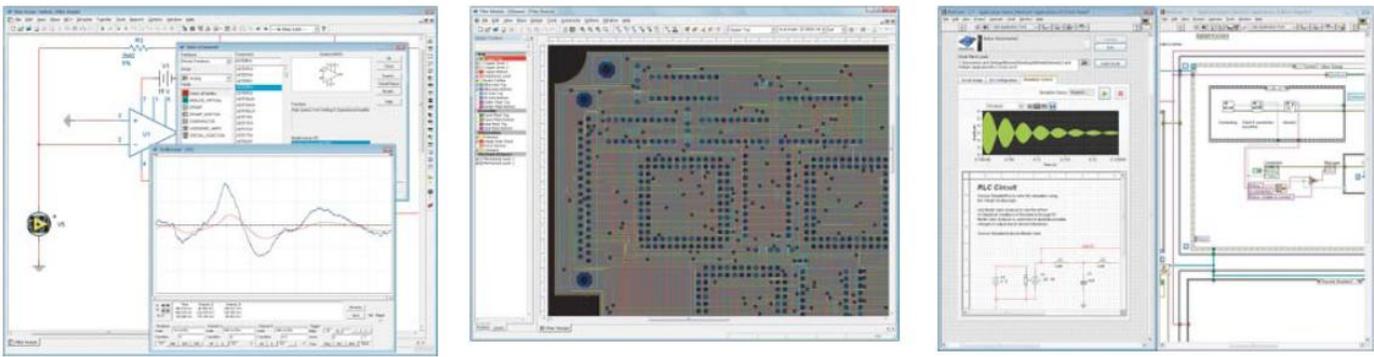
Figure 1. Take advantage of an integrated design and test platform, from Multisim capture and simulation, to Ultiboard layout and routing, to LabVIEW validation and verification.

Multisim Capture

In the intuitive Multisim environment, you can access a comprehensive component library. In a modeless design environment, you can quickly define circuit topology and then take advantage of advanced simulation to investigate design behavior

More than 16,000 device components
Simulation of models from Analog Devices, Texas Instruments, and ON Semiconductor
Easy-to-use and well-organized database

Multisim Simulation

Simulation improves the design flow. You can identify errors and quickly iterate design modifications to improve behavior prior to prototyping. By reducing prototype iterations, you save time and resources

Easy-to-use simulation in a highly graphical environment that requires no SPICE expertise
Choice of 22 simulation instruments (Figure 3) to visualize design behavior
19 industry-standard analyses, such as AC analysis and Monte Carlo, for greater design insight
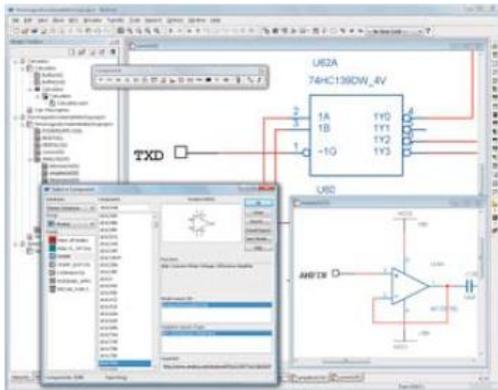Error identification at the earliest stages of the design flow to improve characteristic performance

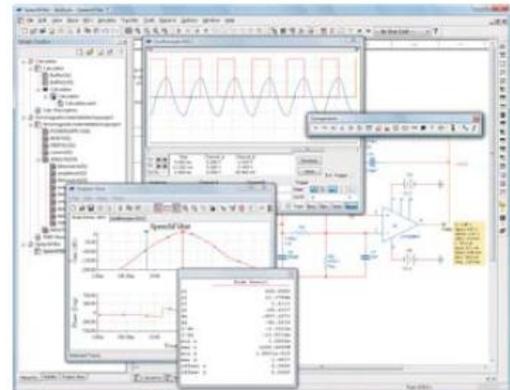*Figure 2. Quickly and easily define circuits in Multisim.*

Figure 3. Use intuitive simulation instruments and analyses to validate design behavior without expertise in SPICE.

Enhanced Simulation Capabilities

Multisim 10.1 provides new and enhanced SPICE parser technology, to improve circuit convergence and accuracy, as well as expanded PSpice compatibility. This along with the growing range of visualization techniques and advanced analyses gives you a complete set of tools to analyze circuit behavior.

Beyond Traditional Simulation

Go beyond conventional simulation by using LabVIEW to introduce real measurements as simulation stimuli. You can model and improve designs based on the effects of real-world inputs to tweak circuit behavior and identify design limitations and possible enhancements before prototyping a physical board. To tailor the analysis for an application, you can take advantage of Multisim and LabVIEW integration to create custom LabVIEW instruments to meet domain-specific criteria.

Virtually prototype circuits by injecting real measurements into Multisim simulation
Download or build additional LabVIEW VIs to analyze simulated data with greater accuracy
Integrated Design and Test Platform with NI Multisim, Ultiboard, and LabVIEW

Flexible Layout and Routing in Ultiboard

Multisim provides integration with Ultiboard and the ability to forward annotate to Mentor Graphics PADS. With Ultiboard, the layout process is completely integrated with features such as cross-probing and annotation of design. From part placement to routing, Ultiboard offers a flexible platform to design your printed circuit boards (PCBs). The flexible Ultiboard design environment delivers automated functionality for speed and manual techniques for precise control. This flexibility, along with Multisim integration, optimizes the PCB design process so you can easily take a design from schematic to production (Figure 4).

Streamline the Design Flow with Unparalleled Integration to LabVIEW

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The NI circuit design platform delivers the unique and unparalleled ability to transition a design to not only layout but also the prototype validation and test stages. LabVIEW (Figure 5) is a graphical programming language you can use to easily, rapidly, and cost-effectively interface with measurement hardware, analyze data, and share results. Using virtual instrumentation, you can connect to NI measurement hardware – such as GPIB or PXI modular instrumentation – and with LabVIEW interrogate physical prototypes from your PC.
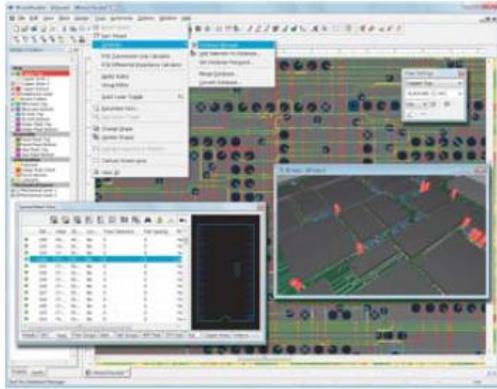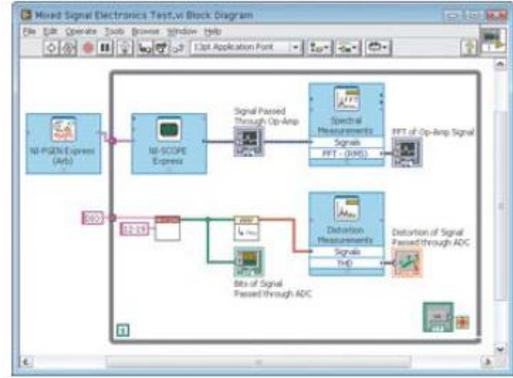

Figure 4. Lay out and route PCBs in Ultiboard.

Figure 5. Rapidly and cost-effectively program in LabVIEW.

Multisim and LabVIEW

By integrating Multisim and LabVIEW, you can transfer simulated measurements to LabVIEW to compare with real prototype data. You can immediately benchmark and correlate design measurements to validate circuit behavior.

With the Multisim Automation API, you can use any COM-aware programming language (such as LabVIEW) to access simulated data. You also can automate simulation to run from LabVIEW as well as correlate it to real measurements in a single interface. To learn more about how you can access the Multisim Automation API in LabVIEW (Figure 6) using unique toolkits, view ni.com/multisim.

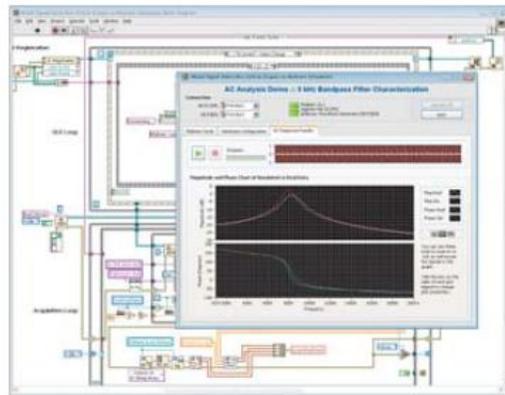*Figure 6.* Automate Multisim simulation with LabVIEW.

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Ordering Information

For a complete list of accessories, visit the product page on ni.com.

Products	Part Number	Recommended Accessories	Part Number
NI Circuit Design Suite			
NI Circuit Design Suite Base (Multisim Base and Ultiboard Full)	779930-35	No accessories required.	
NI Circuit Design Suite Full (Multisim Full and Ultiboard Full)	779928-35	No accessories required.	
NI Circuit Design Suite Power Pro (Multisim Power Pro and Ultiboard Power Pro)	779827-35	No accessories required.	
NI Ultiboard			
NI Ultiboard Power Pro Edition	779826-35	No accessories required.	
NI Ultiboard Full Edition	779825-35	No accessories required.	
NI Multisim			
NI Multisim Full Development System	779821-35	No accessories required.	
NI Multisim Power Pro Edition	779822-35	No accessories required.	

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NI Multisim Base Edition	779820-35	No accessories required.

Support and Services

System Assurance Programs

NI system assurance programs are designed to make it even easier for you to own an NI system. These programs include configuration and deployment services for your NI PXI, CompactRIO, or Compact FieldPoint system. The NI Basic System Assurance Program provides a simple integration test and ensures that your system is delivered completely assembled in one box. When you configure your system with the NI Standard System Assurance Program, you can select from available NI system driver sets and application development environments to create customized, reorderable software configurations. Your system arrives fully assembled and tested in one box with your software preinstalled. When you order your system with the standard program, you also receive system-specific documentation including a bill of materials, an integration test report, a recommended maintenance plan, and frequently asked question documents. Finally, the standard program reduces the total cost of owning an NI system by providing three years of warranty coverage and calibration service. Use the online product advisors at ni.com/advisor to find a system assurance program to meet your needs.

Technical Support

Get answers to your technical questions using the following National Instruments resources.

- **Support** - Visit ni.com/support to access the NI KnowledgeBase, example programs, and tutorials or to contact our applications engineers who are located in NI sales offices around the world and speak the local language.
- **Discussion Forums** - Visit forums.ni.com for a diverse set of discussion boards on topics you care about.
- **Online Community** - Visit community.ni.com to find, contribute, or collaborate on customer-contributed technical content with users like you.

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While you may never need your hardware repaired, NI understands that unexpected events may lead to necessary repairs. NI offers repair services performed by highly trained technicians who quickly return your device with the guarantee that it will perform to factory specifications. For more information, visit ni.com/repair.

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The NI training and certification program delivers the fastest, most certain route to increased proficiency and productivity using NI software and hardware. Training builds the skills to more efficiently develop robust, maintainable applications, while certification validates your knowledge and ability.

- **Classroom training in cities worldwide** - the most comprehensive hands-on training taught by engineers.
- **On-site training at your facility** - an excellent option to train multiple employees at the same time.
- **Online instructor-led training** - lower-cost, remote training if classroom or on-site courses are not possible.
- **Course kits** - lowest-cost, self-paced training that you can use as reference guides.
- **Training memberships** and training credits - to buy now and schedule training later.

Visit ni.com/training for more information.

Extended Warranty

NI offers options for extending the standard product warranty to meet the life-cycle requirements of your project. In addition, because NI understands that your requirements may change, the extended warranty is flexible in length and easily renewed. For more information, visit ni.com/warranty.

OEM

NI offers design-in consulting and product integration assistance if you need NI products for OEM applications. For information about special pricing and services for OEM customers, visit ni.com/oem.

Alliance

Our Professional Services Team is comprised of NI applications engineers, NI Consulting Services, and a worldwide National Instruments Alliance Partner program of more than 700 independent consultants and integrators. Services range from start-up assistance to turnkey system integration. Visit ni.com/alliance.

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