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

*Last Revised: 2014-11-06 07:14:37.0*

# NI 9435



## Requirements and Compatibility

### OS Information

- Real-Time OS
- Windows

### Driver Information

- NI-DAQmx
- NI-RIO

### Software Compatibility

- LabVIEW
- LabWindows/CVI
- SignalExpress
- Visual Studio
- Visual Studio .NET

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## Ordering Information

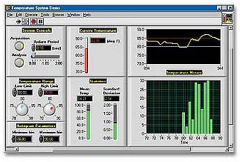
For a complete list of accessories, visit the product page on ni.com.

| Products | Part Number | Recommended Accessories | Part Number |
|---|---|---|---|
| | | No accessories required. | |

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## Software Recommendations

### LabVIEW Professional Development System for Windows



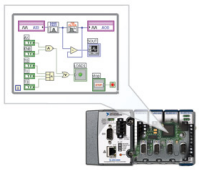
- Advanced software tools for large project development
- Automatic code generation using DAQ Assistant and Instrument I/O Assistant
- Tight integration with a wide range of hardware
- Advanced measurement analysis and digital signal processing
- Open connectivity with DLLs, ActiveX, and .NET objects
- Capability to build DLLs, executables, and MSI installers

### NI LabWindows™/CVI for Windows



- Real-time advanced 2D graphs and charts
- Complete hardware compatibility with IVI, VISA, DAQ, GPIB, and serial
- Analysis tools for array manipulation, signal processing statistics, and curve fitting
- Simplified cross-platform communication with network variables
- Measurement Studio .NET tools (included in LabWindows/CVI Full only)
- The mark LabWindows is used under a license from Microsoft Corporation.

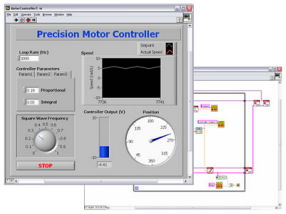
### NI LabVIEW FPGA Module



Design FPGA applications for NI reconfigurable I/O (RIO) hardware targets

- Program with the same graphical environment used for desktop and real-time applications
- Execute control algorithms with loop rates up to 300 MHz
- Implement custom timing and triggering logic, digital protocols, and DSP algorithms
- Incorporate existing HDL code and third-party IP including Xilinx CORE Generator functions
- Included in the LabVIEW Embedded Control and Monitoring Suite

### NI LabVIEW Real-Time Module




Design deterministic real-time applications with LabVIEW graphical programming

- Download to dedicated NI or third-party hardware for reliable execution and a wide selection of I/O
- Take advantage of built-in PID control, signal processing, and analysis functions
- Automatically take advantage of multicore CPUs or set processor affinity manually
- Includes real-time OS, development and debugging support, and board support
- Purchase individually or as part of a LabVIEW suite

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## 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.

### Calibration

NI measurement hardware is calibrated to ensure measurement accuracy and verify that the device meets its published specifications. To ensure the ongoing accuracy of your measurement hardware, NI offers basic or detailed recalibration service that provides ongoing ISO 9001 audit compliance and confidence in your measurements. To learn more about NI calibration services or to locate a qualified service center near you, contact your local sales office or visit ni.com/calibration.

### 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.

### Repair

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.

### Training and Certifications

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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## Detailed Specifications

The following specifications are typical for the range –40 to 70 °C unless otherwise noted. All voltages are relative to DIa–DIb unless otherwise noted.

| | |
|---|---|
| **Input Characteristics** | |
| Number of channels | 4 digital input channels |
| Input type | Sinking or sourcing |
| Digital logic levels | |
| OFF state | |
| Input voltage | ≤±1 VDC/VAC$_{peak}$ |
| Input current | ≤±200 µA DC/AC$_{peak}$ |
| ON state | |
| DC input voltage | ≥±4 VDC |
| DC input current | ≥600 µA DC |
| AC input voltage | ≥10 $V_{rms}$ at 50/60 Hz |
| AC input voltage | ≥3 $V_{rms}$ at 1 kHz |
| I/O protection | |
| Input voltage (DIa–DIb) | 250 VAC, ±250 VDC max |
| Input current | ±1.4 mA, internally limited |
| Input delay time [1] | 2.8 ms max |
| MTBF | 700,726 hours at 25 °C; Bellcore Issue 2, Method 1, Case 3, Limited Part Stress Method |

**Note** Contact NI for Bellcore MTBF specifications at other temperatures or for MIL-HDBK-217F specifications.

| | |
|---|---|
| **Power Requirements** | |
| Power consumption from chassis | |
| Active mode | 105 mW max |
| Sleep mode | 1.3 mW max |
| Thermal dissipation (at 70 °C) | |
| Active mode | 1.4 W max |
| Sleep mode | 1.35 W max |

**Physical Characteristics**

If you need to clean the module, wipe it with a dry towel.

**Note** For two-dimensional drawings and three-dimensional models of the C Series module and connectors, visit ni.com/dimensions and search by module number.

| | |
|---|---|
| Screw-terminal wiring | 12 to 24 AWG copper conductor wire with 10 mm (0.39 in.) of insulation stripped from the end. |
| Torque for screw terminals | 0.5 to 0.6 N · m (4.4 to 5.3 lb · in.) |
| Ferrules | 0.25 $mm^2$ to 2.5 $mm^2$ |
| Weight | 150 g (5.3 oz) |

**Safety**

**Safety Voltages**

Connect only voltages that are within the following limits.

| | |
|---|---|
| DIa-to-DIb | 250 $V_{rms}$ max, Measurement Category II |
| Isolation | |
| Channel-to-channel | None |
| Channel-to-earth ground | |
| Continuous | 250 $V_{rms}$, Measurement Category II |

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| | |
|---|---|
| Withstand | 2,300 $V_{rms}$, verified by a 5 s dielectric withstand test |

Measurement Category II is for measurements performed on circuits directly connected to the electrical distribution system (MAINS [2] ). This category refers to local-level electrical distribution, such as that provided by a standard wall outlet (for example, 115 AC voltage for U.S. or 230 AC voltage for Europe). Examples of Measurement Category II are measurements performed on household appliances, portable tools, and similar hardware.

**Caution** Do not connect the NI 9435 to signals or use for measurements within Measurement Categories III or IV.

| **Hazardous Locations** | |
|---|---|
| U.S. (UL) | Class I, Division 2, Groups A, B, C, D, T4 |

**Note** The NI 9435 is not approved for use in hazardous locations in Europe or Canada.

**Safety Standards**

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA 61010-1

**Note** For UL and other safety certifications, refer to the product label or the *Online Product Certification* section.

## Electromagnetic Compatibility

This product is designed to meet the requirements of the following standards of EMC for electrical equipment for measurement, control, and laboratory use:

- EN 61326 (IEC 61326): Class A emissions; Industrial immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- AS/NZS CISPR 11: Group 1, Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

**Note** For the standards applied to assess the EMC of this product, refer to the *Online Product Certification* section.

**Note** For EMC compliance, operate this device with double-shielded cables.

## CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

**Note** For the standards applied to assess the EMC of this product, refer to the *Online Product Certification* section.

## Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for this product, visit ni.com/certification, search by module number or product line, and click the appropriate link in the Certification column.

## Shock and Vibration

To meet these specifications, you must panel mount the system and either affix ferrules to the ends of the terminal wires or use the NI 9932 backshell kit to protect the connections.

| | |
|---|---|
| Operating vibration | |
| Random (IEC 60068-2-64) | 5 $g_{rms}$, 10 to 500 Hz |
| Sinusoidal (IEC 60068-2-6) | 5 g, 10 to 500 Hz |
| Operating shock (IEC 60068-2-27) | 30 g, 11 ms half sine, 50 g, 3 ms half sine, 18 shocks at 6 orientations |

## Environmental

National Instruments C Series modules are intended for indoor use only, but may be used outdoors if installed in a suitable enclosure. Refer to the manual for the chassis you are using for more information about meeting these specifications.

| | |
|---|---|
| Operating temperature | –40 to 70 °C |
| Storage temperature | –40 to 85 °C |
| Ingress protection | IP 40 |
| Operating humidity | 10 to 90% RH, noncondensing |
| Storage humidity | 5 to 95% RH, noncondensing |
| Maximum altitude | 2,000 m |
| Pollution Degree | 2 |

## Environmental Management

National Instruments is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial not only to the environment but also to NI customers.

For additional environmental information, refer to the *NI and the Environment* Web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

## Waste Electrical and Electronic Equipment (WEEE)



**EU Customers** At the end of their life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit ni.com/environment/weee.htm.



电子信息产品污染控制管理办法 （中国 RoHS）

中国客户 National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。
关于 National Instruments 中国 RoHS 合规性信息，请登录 ni.com/environment/rohs_china。
(For information about China RoHS compliance, go to ni.com/environment/rohs_china.)

[1] The input delay time is the minimum amount of time that the voltage across a channel must remain at the ON or OFF level to change the channel from ON to OFF or from OFF to ON.

[2] MAINS is defined as a hazardous live electrical supply system that powers hardware. Suitably rated measuring circuits may be connected to the MAINS for measuring purposes.

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