

C Series Analog Input Modules

NI 9201, NI 921x, NI 9221, NI 923x

- Signal conditioning for high voltage (± 60 V), thermocouples, RTDs, accelerometers, microphones, strain gages, current inputs
- Advanced features such as smart TEDS sensor capability, antialiasing filters, open-thermocouple detection
- ± 80 mV, ± 10 V, or ± 60 V analog input ranges
- 12-, 16-, or 24-bit (delta-sigma) resolution
- Up to 800 kS/s multiplexed or up to 100 kS/s simultaneous-sampling analog-to-digital converter (ADC)
- Up to 32 channels per module
- Up to 2,300 V_{rms} isolation (withstand), up to 250 V_{rms} isolation (continuous)
- NIST-traceable calibration certificate for guaranteed accuracy



Model	CompactRIO	NI CompactDAQ	Signal Type	Channels	Resolution (bits)	Max Sampling Rate (S/s)	Signal Input Ranges	Simultaneous Sampling	Antialiasing Filters	Isolation	Connector Options
NI 9201	✓	✓	Voltage	8	12	500 k	± 10 V	—	—	✓	Screw Terminal, D-Sub
NI 9203	✓	✓	Current	8	16	200 k	± 20 mA, 0 to 20 mA	—	—	✓	Screw Terminal
NI 9205	✓	✓	Voltage	32 SE/16 DI	16	250 k	± 10 , ± 5 , ± 1 , ± 0.2 V	—	—	✓	Spring Terminal, D-Sub
NI 9206	✓	✓	CAT I Isolated Voltage	16 DI	16	250 k	± 10 , ± 5 , ± 1 , ± 0.2 V	—	—	✓	Spring Terminal
NI 9211	✓	✓	Thermocouple	4	24	15	± 80 mV	—	✓	✓	Screw Terminal
NI 9215	✓	✓	Voltage	4	16	100 k/ch	± 10 V	✓	—	✓	Screw Terminal, BNC
NI 9217	✓	✓	RTD	4	24	400	0 to 400 Ω	—	✓	✓	Screw Terminal
NI 9221	✓	✓	Voltage	8	12	800 k	± 60 V	—	—	✓	Screw Terminal, D-Sub
NI 9233	✓	✓	IEPE	4	24	50 k/ch	± 5 V	✓	✓	—	BNC
NI 9237	✓	✓	Bridge	4	24	50 k/ch	± 250 mV	✓	✓	✓	RJ50

Table 1. C Series Analog Input Modules Selection Guide

Overview

High-accuracy C Series analog input modules for National Instruments CompactRIO and NI CompactDAQ provide high-performance measurements for a wide variety of industrial, in-vehicle, and laboratory sensors and signal types. Each module includes built-in signal conditioning and an integrated connector with screw terminal or cable options for flexible and low-cost signal wiring. All modules feature NI CompactRIO Extreme Industrial Certifications and Ratings.

System Compatibility

You can use NI C Series modules in multiple system types depending on available software. See Table 1 for CompactRIO and NI CompactDAQ module compatibility because not all modules work with both systems. Many of the advanced features described apply only to reconfigurable I/O systems and not to NI CompactDAQ.

Advanced Features

When used with CompactRIO, NI C Series analog input modules connect directly to reconfigurable I/O (RIO) FPGA hardware to create high-performance embedded systems. The reconfigurable FPGA hardware within CompactRIO provides a variety of options for custom timing, triggering, synchronization, filtering, signal processing, and

high-speed decision making for all C Series analog modules. For instance, with CompactRIO, you can implement custom triggering for any analog sensor type on a per-channel basis using the flexibility and performance of the FPGA and the numerous arithmetic and comparison function blocks built into NI LabVIEW FPGA.

Key Features

- High-accuracy, high-performance analog measurements for any CompactRIO embedded system, R Series expansion chassis, or NI CompactDAQ chassis
- Screw terminals, BNC, D-Sub, spring terminals, strain relief, high-voltage, cable, solder cup backshell, and other connectivity options
- Available channel-to-earth ground double-isolation barrier for safety, noise immunity, and high common-mode voltage range
- CompactRIO Extreme Industrial Certifications and Ratings
- Built-in signal conditioning for direct connection to sensors and industrial devices

Visit ni.com/compactrio or ni.com/compactdaq for up-to-date information on module availability, example programs, application notes, and other developer tools.



North American
Hazardous Locations



C Series Module Accessories

Connectivity Accessories

CompactRIO and NI CompactDAQ systems are designed to provide flexible options for low-cost field wiring and cabling. Most C Series modules have a unique connector block option that offers secure and safe connections to your C Series system. Table 2 contains all of the connector blocks available for C Series I/O modules.

Accessory	Description
NI 9932	10-position strain relief and high-voltage screw-terminal connector kit
NI 9933	37-pin D-Sub connector kit with strain relief and D-Sub shell
NI 9934	25-pin D-Sub connector kit with strain relief and D-Sub shell
NI 9935	15-pin D-Sub connector kit with strain relief and D-Sub shell
NI 9936	10-position screw-terminal plugs (quantity 10)
NI 9939	16-position connector kit with strain relief

Note: To meet shock and vibration requirements, you must affix ferrules to the ends of the wires on all screw-terminal connectors.

Table 2. Connector Blocks for C Series I/O Modules

Table 3 lists the recommended connector block accessories for each C Series analog input module.

C Series Analog Input Module	Recommended Module Accessory
NI 9201	NI 9932, NI 9936
NI 9201 with D-Sub	NI 9934 ¹
NI 9211	NI 9932, NI 9936
NI 9215	NI 9932, NI 9936
NI 9217	NI 9939
NI 9221	NI 9932, NI 9936
NI 9221 with D-Sub	NI 9934 ¹

¹Requires a 25-pin D-Sub connector such as the NI 9934 accessory kit.

Table 3. Recommended Connector Block Accessories

The NI 9932 kit provides strain relief and operator protection from high-voltage signals for any 10-position screw-terminal module.



Figure 1. NI 9932 10-Position Strain Relief and High-Voltage Screw-Terminal Connector Kit

The NI 9933 includes a screw-terminal connector with strain relief as well as a D-Sub solder cup backshell for creating custom cable assemblies for any module with a 37-pin D-Sub connector.

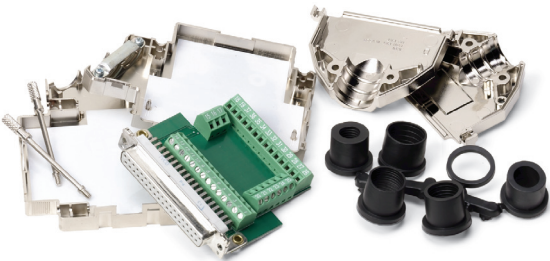


Figure 2. NI 9933 37-Pin D-Sub Connector Kit with Strain Relief and D-Sub Shell

The NI 9934 includes a screw-terminal connector with strain relief as well as a D-Sub solder cup backshell for creating custom cable assemblies for any module with a 25-pin D-Sub connector.

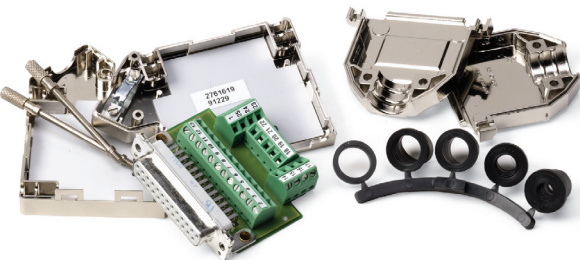


Figure 3. NI 9934 25-Pin D-Sub Connector Kit with Strain Relief and D-Sub Shell

The NI 9935 includes a screw-terminal connector with strain relief as well as a D-Sub solder cup backshell for creating custom cable assemblies for any module with a 15-pin D-Sub connector.

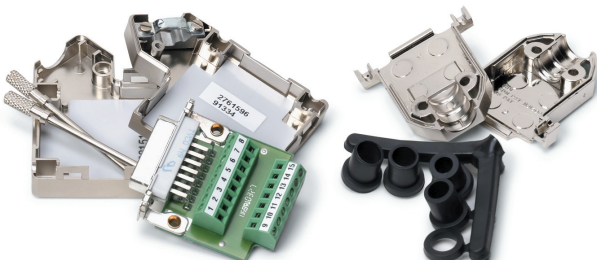


Figure 4. NI 9935 15-Pin D-Sub Connector Kit with Strain Relief and D-Sub Shell

C Series Module Accessories

The NI 9936 consists of 10-position screw-terminal plugs for any 10-position screw-terminal module.



Figure 5. NI 9936 10-Position Screw-Terminal Plugs

Visit ni.com/compactrio or ni.com/compactdaq for up-to-date information on availability of accessories.

CompactRIO Ordering Information

Ordering Information

Developer Kits

NI cRIO-9961 Embedded System Developer Hardware Evaluation Kit	779107-01
NI Reconfigurable I/O Software Development Kit.....	779149-03

Reconfigurable Embedded Systems

Real-Time Controllers

NI cRIO-9002	779000-01
NI cRIO-9004	779055-01

Reconfigurable Chassis

NI cRIO-9101	779052-01
NI cRIO-9102	779007-01
NI cRIO-9103	779053-01
NI cRIO-9104	779054-01

Power Supplies

NI PS-1	777567-01
NI PS-2	
U.S. 120 VAC/Japan 100 VAC	777584-01
North American 240 VAC	777584-05
NI PS-3	
U.S. 120 VAC/Japan 100 VAC	777585-01
North American 240 VAC	777585-05
NI PS-4	778586-90
NI PS-5	778805-90

R Series Expansion Systems

Expansion Chassis

NI cRIO-9151 chassis	779008-01
SH68-C68-S cable, 2 m	186381-02

R Series Devices

PCI

NI PCI-7811R digital I/O	779363-01
NI PCI-7813R digital I/O	779370-01
NI PCI-7830R multifunction I/O	779361-01
NI PCI-7831R multifunction I/O	778797-01
NI PCI-7833R multifunction I/O	779359-01

PXI

NI PXI-7811R digital I/O	778800-01
NI PXI-7813R digital I/O	779362-01
NI PXI-7830R multifunction I/O	779364-01
NI PXI-7831R multifunction I/O	778668-01
NI PXI-7833R multifunction I/O	779360-01

C Series Modules¹

Analog Input Modules

NI 9201	779013-01
NI 9201 with D-Sub	779372-01
NI 9203	779516-01
NI 9205	779519-01
NI 9205 with D-Sub	779357-01
NI 9206	779526-01

NI 9211	779001-01
NI 9215	779011-01
NI 9215 with BNC	779138-01
NI 9217	779592-01
NI 9221	779014-01
NI 9221 with D-Sub	779373-01
NI 9233	779015-01
NI 9237	779521-01

Analog Output Module

NI 9263	779012-01
NI 9265	779334-01

Digital Input and Counter/Timer Modules

NI 9401	779351-01
NI 9411	779005-01
NI 9421	779002-01
NI 9421 with D-Sub	779136-01
NI 9422	779522-01
NI 9423	779009-01
NI 9425	779139-01
NI 9435	779010-01

Digital Output and Relay Modules

NI 9401	779351-01
NI 9472	779004-01
NI 9472 with D-Sub	779137-01
NI 9474	779003-01
NI 9476	779140-01
NI 9477	779517-01
NI 9481	779006-01

Accessories

NI 9912	779019-01
NI 9915	779018-01
NI 9917	779454-01
NI 9918	779455-01
NI 9932	779017-01
NI 9933	779103-01
NI 9934	779104-01
NI 9935	779016-01
NI 9936	779105-01
NI 9937	779106-01
NI 9939	192692-01

Ethernet Cables

CAT 5	
5 m	182219-05
CAT 5 Crossover	
5 m	187375-05

OEM Discounts Available

NI offers aggressive OEM pricing discounts for high-volume OEM applications. Contact NI for a quote.

¹Visit ni.com/compactrio for up-to-date information on module availability.

BUY NOW!

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

NI CompactDAQ Ordering Information

Ordering Information

System Chassis

NI cDAQ-9172	
U.S. (120 VAC)	779508-01
Switzerland (220 VAC)	779508-02
Australia (240 VAC)	779508-03
Europe (240 VAC)	779508-04
UK (240 VAC)	779508-06
Japan (100 V)	779508-07

C Series Modules

Analog Input Modules

NI 9205	779519-01
NI 9205 with D-Sub	779357-01
NI 9206	779526-01
NI 9211	779001-01
NI 9215	779011-01
NI 9215 with BNC	779138-01
NI 9233	779015-01
NI 9237	779521-01

Analog Output Module

NI 9263	779012-01
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Digital Input Modules

NI 9401	779351-01
NI 9421	779002-01
NI 9421 with D-Sub	779136-01

Digital Output and Relay Modules

NI 9401	779351-01
NI 9472	779004-01
NI 9472 with D-Sub	779137-01
NI 9481	779006-01

Accessories

NI 9915	779018-01
NI 9901	779473-01
NI 9933	779103-01
NI 9940	779567-01
NI 9941	779568-01
NI 9917	779454-01
NI 9918	779455-01
NI 9932	779017-01
NI 9936	779105-01

Academic Bundles

Standard Bundle	777448-60
Instrumentation Bundle	777448-61
DSA (Sound and Vibration) Bundle	777448-62

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NI Factory Installation Services

NI Factory Installation Services (FIS) is the fastest and easiest way to use your PXI or PXI/SCXI combination systems right out of the box. Trained NI technicians install the software and hardware and configure the system to your specifications. NI extends the standard warranty by one year on hardware components (controllers, chassis, modules) purchased with FIS. To use FIS, simply configure your system online with ni.com/pxiadvisor.

Calibration Services

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