NI CompactDAQ

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What Is NI CompactDAQ?

CompactDAQ is rugged, modular hardware that connects sensors and electrical signals to a PC over Ethernet or USB. Its available measurement modules, expandability, and software support make CompactDAQ an ideal "universal test instrument" for teams trying to do more with less. Use CompactDAQ for vibration analysis, motor and bearing tests, thermal tests, power quality measurements, reading industrial digital lines, impact/strain tests, and many more test applications.

- High-speed sensor measurements
- Portable or benchtop validation systems
- Combining sensors and electrical measurements

Why Choose CompactDAQ?

CompactDAQ offers a versatile and robust solution for various data acquisition needs. Whether you're measuring precise sensor data, scaling a system, or working in harsh environments, CompactDAQ adapts to your requirements with ease.

Closeup on Features

Modular I/O (Future Expansion)

The modular CompactDAQ I/O system provides exceptional flexibility and scalability by allowing you to choose from 17 different types of C Series modules, with more than 60 variants within these types. Each module type adds specific circuitry that enables CompactDAQ to handle various measurement tasks, from analog and digital signals to specialized sensor inputs. This modular approach allows you to customize the system based on your unique application needs, selecting specifications and connectors that fit your requirements. You can select modules based on your immediate needs while easily adding or swapping modules as your testing requirements evolve.

Synchronization

For users requiring distributed data acquisition, CompactDAQ supports network-based synchronization through time sensitive networking (TSN). TSN allows you to synchronize multiple CompactDAQ systems with precision, ensuring that you accurately correlate measurements from different locations. The CompactDAQ Ethernet chassis with TSN support makes network synchronization easier by abstracting much of the complexity within the NI-DAQmx driver. You can achieve sub-microsecond synchronization accuracy between multiple chassis, enabling consistent and reliable data collection for large-scale, distributed tests.

Connector Options

CompactDAQ systems provide a range of connector options to suit different preferences and application needs:

- **Spring terminal connectors–**Offer high-density connections ideal for applications where space is a constraint.
- **Screw terminal connectors–**Provide secure, reliable connections that are easy to configure, making them suitable for most general-purpose applications.
- **D-SUB and BNC connectors–**Available for high-performance or specialized applications, providing additional versatility in connecting different devices.

This range of connector options ensures that CompactDAQ can meet the specific requirements of different testing environments, providing customization where it's needed most.

Mounting Options

CompactDAQ offers several mounting options, making it adaptable to various working environments. You can mount it on desktops, DIN rails, panels, or racks, offering maximum flexibility in setup. Whether in a laboratory, production line, or in the field, you can mount CompactDAQ securely to meet the specific needs of each application. This flexibility ensures efficient use in any setting without the need for custom mounting solutions, allowing you to integrate the DAQ system seamlessly into your existing setup and save on installation time and costs.

Connect to your PC over USB or Ethernet

CompactDAQ connects via USB or Ethernet, offering flexible options to fit different environments and applications. USB provides a simple, plug-and-play experience ideal for portable, desktop, or stand-alone setups. Ethernet connectivity supports distributed measurements by connecting CompactDAQ to local or enterprise networks, enabling multiple systems to run from a single PC with extended reach up to 200 meters. With both options available, you can integrate CompactDAQ in a way that best suits your needs.

Counter/Timer Capability

CompactDAQ offers advanced counter/timer capabilities, powered by NI System Timing Controller Technology (NI-STC), which is based on 30 years of timing expertise. All CompactDAQ chassis come with four independent 32-bit advanced counters, providing the following features:

- **PWM generation and measurement–**Generate and measure pulse-width modulation signals for motor control and other applications.
- **Event counting–**Accurately count digital events, providing detailed analysis for applications such as frequency detection.
- **Frequency measurement and generation–**Measure or generate frequency signals for precise analysis and synchronization.
- **Train generation and pulse counting–**Generate pulse trains or count pulses for applications that require precise timing and control.
- **Quadrature encoder measurement–**Perform encoder measurements for position tracking and motion applications.

NI CompactDAQ Chassis

1 Hz   100 Hz   50 KHz
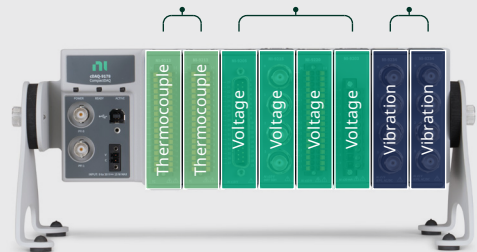
Timing Engines

CompactDAQ features three independent analog input timing engines, providing flexibility to create up to three separate analog input tasks, each with its own unique sample rate and configuration. This allows you to efficiently combine slow measurements like temperature with high-speed signals like vibration or sound, optimizing your test setup for a wide range of sensors. By running multiple sets of measurements concurrently from separate loops or threads in a program, you gain precise timing control. When needed, you can synchronize all channels using a single timing engine, ensuring coherent data collection across all modules.

Output and Control Signals

CompactDAQ integrates control functionalities alongside data acquisition, facilitating more dynamic and automated testing processes. CompactDAQ features high-speed signal generation, driven by a 100 MHz time base for precise output timing, with analog output generation rates up to 100 kS/s. With analog, digital, and PWM signal outputs, you can set control setpoints, simulate voltage and current signals, communicate with PLCs, and control high-current relays. This functionality allows you to automate test processes, reduce manual intervention, and implement sophisticated test setups that require both data collection and active control. By combining measurement and control in a single system, CompactDAQ enhances your testing capabilities and efficiency.

Rugged and Portable Design

CompactDAQ systems are designed to be rugged yet portable, making them suitable for both lab and field environments. With shock ratings of up to 50 g and an operational temperature range of -40 to 70 °C, CompactDAQ is ideal for challenging environments, such as oil and gas fields or heavy machinery sites.

The compact form factor makes it easy to transport, whether used in a vehicle as a data logger or taken onsite for troubleshooting purposes. Additionally, CompactDAQ can be placed closer to test subjects, reducing the need for long sensor wires and minimizing signal degradation. This combination of portability and durability ensures CompactDAQ can handle a variety of tasks, wherever you need to go, while reducing the risk of equipment failure and ensuring uninterrupted data collection.

NI Data Acquisition (DAQ) Software

Engineers and scientists rely on data, so NI developed specialized software with built-in tools for viewing and analyzing to help you acquire the data you need and turn it into insights. NI FlexLogger™ software, NI LabVIEW, and the NI LabVIEW+ Suite help engineers do more, faster, with hundreds of features and functions to help with viewing, analyzing, and sharing data.

All NI DAQ hardware uses the NI-DAQmx driver, which allows your computer to communicate with NI hardware, whether you're programming in LabVIEW or Python, or using FlexLogger. The NI-DAQmx driver also includes support and example code for programming languages, including Python, C/C++, and C#.

	FlexLogger Lite	LabVIEW	LabVIEW+ Suite
OS Support	Windows	Windows, Linux[1]	Windows, Linux
Best for:	Engineers and researchers who need to log data without programming	Engineers and researchers who need to develop custom tests with logic, analysis, and reporting	Test professionals working in validation labs or on manufacturing test teams
Hardware Compatibility			
NI DAQ hardware	✓[2]	✓	✓
Other NI hardware	—	✓	✓
Other vendor devices	—	✓	✓
Development			
Native graphical programming	—	✓	✓
Multithreaded code execution	—	✓	✓
Code debugging	—	✓	✓
Analog output waveform generation	—	✓	✓
Create user interfaces with pre-built data display elements	✓	✓	✓
Analysis and Signal Processing			
Standard math functions, probability, and statistics	—	✓	✓
Additional analysis and signal processing functions, including linear algebra, curve fitting, signal conditioning, wavelet analysis, and more	—	✓	✓
Advanced analysis functions, including regression, order analysis, and more	—	—	✓
Software Interoperability			
Integrate Python, C/C++, .NET, or MathWorks® MATLAB® software code	—	✓	✓
Test System Development			
Create and edit test sequences and create deployable test systems	—	—	✓
Configure and capture data from NI PXI instruments	—	✓	✓
Accelerate and automate measurement data insights with ready-to-use test data visualization, processing, and reporting tools	—	—	✓
Create web applications	—	—	✓

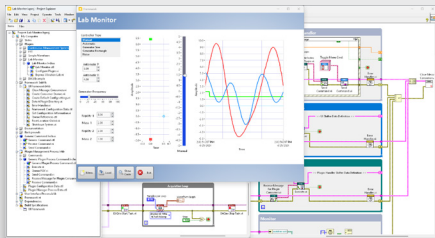[1] Linux is not supported on LabVIEW Base edition.
[2] FlexLogger supported hardware (subset of NI-DAQmx supported hardware).
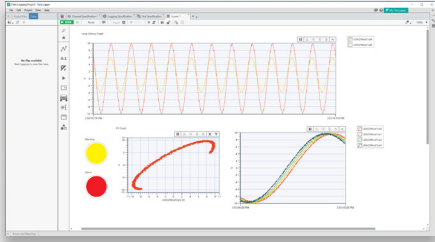
NI FlexLogger

FlexLogger enables quick sensor configuration and mixed signal data logging—no programming required. FlexLogger comes in a full-featured and a free Lite edition.

Learn more about FlexLogger

NI LabVIEW

LabVIEW is a graphical programming environment with unique productivity accelerators for developing test and measurement systems. With graphical programming, engineering-specific analysis functions, and an integrated user interface, LabVIEW has what you need to build automated test systems, fast.

Learn more about LabVIEW
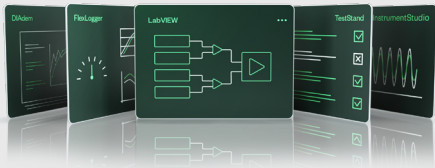
NI LabVIEW+ Suite

The LabVIEW+ Suite is a collection of powerful tools for test professionals involved in electronic and electromechanical testing. Comprehensive and versatile, LabVIEW+ helps engineers optimize every part of their workflow. The LabVIEW+ Suite includes LabVIEW, FlexLogger, and the following software:

- NI TestStand for creating and editing test sequences and building deployable test systems
- NI InstrumentStudio™ software for interactive PXI measurements
- NI DIAdem for instant data visualization plus automated analysis and reporting

Learn more about LabVIEW+ Suite

What Can You Do with CompactDAQ?

With a wide variety of analog and digital modules, a rugged design, and advanced counter/timer capabilities, powered by NI System Timing Controller Technology (NI-STC), CompactDAQ empowers research and test professionals to tackle a vast array of tasks for data acquisition, automation, and testing.

Measure

- Temperature, pressure, and flow sensors
- Voltage signals (from millivolts to 480 volts AC)
- Current measurements, including 4-20 mA loops
- Vibration and sound with dynamic signal inputs
- Strain gages and bridge-based sensors for structural testing
- Frequency, pulse counting, and encoder signals
- CAN and LIN bus communication for automotive testing
- Power measurements across electrical circuits and machinery
- Voltage drops for current measurements through shunt resistors
- Battery and power supply voltages
- Position and displacement with potentiometers and LVDTs
- And many more

Automate and Generate

- Generate analog signals for simulation or control (voltage, current)
- Read/write digital signals for switching, monitoring, and relay control
- Drive high-current relays and solenoids
- Create pulse-width-modulated (PWM) signals for motor control
- Output control signals to communicate with other systems, including PLCs
- Synchronize analog, digital, and counter outputs
- Control and monitor signals for automated test setups
- Interface with LEDs, alarms, and indicators for user feedback
- Stimulus response test

Module Selection and Considerations

Analog C Series modules are, for the most part, measurement-specific modules with front-end circuitry, analog conversion technology, and signal connectivity designed to create the best digital representation of a signal as possible. Use this section to decide on an approach to wiring, understand different module connector options, and select the right measurement modules for your test system.

FIGURE 1

Add analog input, analog output, digital input, digital output, and some communication buses such as CAN and LIN to your CompactDAQ-based test system by installing C Series modules in available chassis slots.

Connectivity Options and Considerations

Some modules will have multiple connection options for the same measurement type. For example, the NI-9205 is available with a spring terminal option and a 37-pin D-SUB option. Here are some methodologies you should consider as you review module connectivity options.

1. NI-9205 spring terminal module
2. Connect to cDAQ chassis
3. Spring terminal connections
4. Plastic backshell around the spring terminal connectors
5. NI-9205 D-SUB module
6. 37-pin D-SUB terminal block
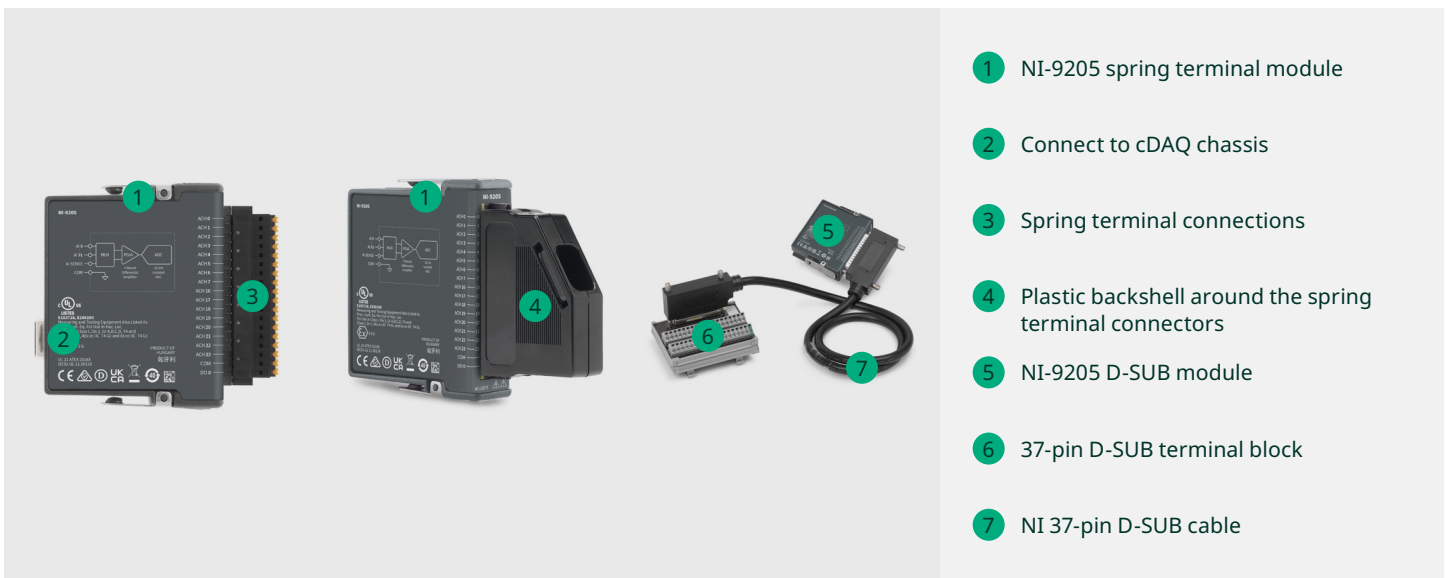7. NI 37-pin D-SUB cable

FIGURE 2

Several modules are available with different connectivity options, such as the NI-9205.

Standardize on Common Connectors for Efficiency

Team members building the system will develop a familiarity with the connector and be more efficient with their work if fewer (or a single) connector option is selected. Standard connections also make stocking accessories more convenient. Spring/screw terminal and D-SUB connection variants are the most common connector types across the family of C Series modules.

FIGURE 3
Standardize on a few module connectors (screw terminals shown) for efficient system assembly and support.

Quick Connections Reduce Setup Time

Use modules with a quick connection option for systems that are more portable or for systems that will be subject to frequent setups and changeover. The tradeoff is you will manage multiple types of accessories, need to crimp and terminate sensor wires, and have fewer channels per module (quick connects are less channel-dense).
The payback comes from time saved during repetitive test setup. BNC (several modules), RJ50 (strain/load), LEMO (dynamic universal), and 10-32 coaxial jack (or "Microdot" as seen on the NI-9231 IEPE module) are all quick connect style modules.

NI C Series Module Connector Types

NI-9234

BNC connectors have two signal pins and secure the cable to the module with a quarter-turn coupling nut.
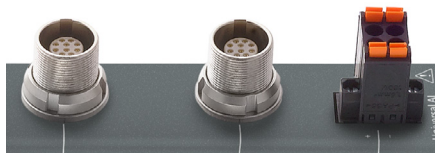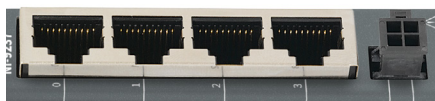

NI-9218

LEMO is a multi-pin push/pull connector that works with several connector standards to offer high-quality connections with a variety of options.

NI-9239

Screw terminal connection options require a flat-bladed screwdriver to close a metal gate that clamps down on exposed signal wire.


NI-9237

RJ50 is a variant of the ubiquitous RJ45 that is used for copper Ethernet connections, but the connector and tools are not compatible. The RJ50 has 10 pins. Purchase RJ50 cables and dongles that convert to screw terminals from NI or purchase a crimping tool and use RJ50 connectors to connect sensor wires directly into the module.


NI-9231

The 10-32 coaxial jack, or "Microdot," uses two pins for the connection with a threaded collar to screw the cable in place. This is a common connector for accelerometers and microphones when there are space constraints.
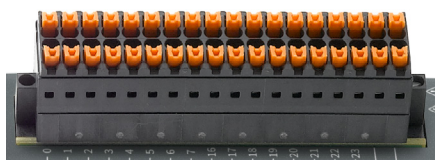
NI-9213

Spring terminal connections use a spring mechanism inside the connector to clamp down on exposed signal wires. Use a small, flat-bladed precision screwdriver to open the cage clamp. Remove the screwdriver after inserting the exposed signal wire.
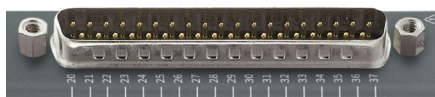
NI-9205

D-SUB connections—named for the D-shaped metal shell—are a mass termination option that use a pin and socket connection. There are multiple ways to connect to a D-SUB connector including the off-the-shelf cables and terminal blocks, module-mounted terminal blocks with screw terminals, and soldering custom cables using off-the-shelf D-SUB kits with solder cups. All these options are available from NI as well as most global electronics component distributors.

How to Build a CompactDAQ System

1. Modules

Use the **Measurement Modules (C Series Modules) section on page 14** to select your modules.

2. Chassis

Use the **CompactDAQ Chassis Table on page 21** to select your chassis.

Measurement Modules (C Series Modules)

Install C Series modules in a CompactDAQ or NI CompactRIO chassis for a custom measurement system that meets your needs. The following table is an overview of all C Series module specifications. See the **Module Selection Table** for module specifications.

C Series Module Specification Overview

Analog Input

Signal Type	Channel Count	Measurement Types	Max Sample Rate	Special Features
Voltage	Up to 32	Options for ±200 mV, ±500 mV, ±1 V, ±5 V, ±10 V, ±60 V, 3 V_{rms}, 400 V_{rms}, 800 V_{rms}, 300 V_{rms}	1 MS/s/ch	Up to channel-channel isolation, antialiasing, and configurable filtering
Current	Up to 16	Options for ±20 mA, 0–5 A_{rms}, 0–20 A_{rms}, 0–50 A_{rms}	200 kS/s	Up to channel-channel isolation, built-in channel diagnostics
Voltage and Current	16	Options for ±20 mA and ±10 V	500 S/s	Channel-earth isolation, built-in noise rejection
Universal	Up to 4	V, mA, TC, RTD, Strain, Ω, IEPE	51.2 kS/s/ch	Up to channel-channel isolation, bridge completion, antialiasing filters, built-in shunt resistors, amplification
Thermocouple	Up to 16	J, K, T, E, N, B, R, and S types	95 S/s/ch	Up to channel-channel isolation, amplification, filtering, CJC
RTD	Up to 8	100 Ω, 1000 Ω	400 S/s	50/60 Hz filtering, bank isolation
Strain-/Bridge-Based	Up to 8	¼, ½, full bridge (120 or 350 Ω)	50 kS/s/ch	External excitation, bridge completion, antialiasing filters
Sound and Vibration	Up to 8	±5 V, ±30 V	102.4 kS/s/ch	IEPE, antialiasing filters

Analog Output

Signal Type	Channel Count	Measurement Types	Max Sample Rate	Special Features
Voltage	Up to 16	Options for 3 V_{rms}, ±10 V, ±40 V (stacked)	1 MS/s/ch	Up to bank-isolation
Current	Up to 8	±20 mA	100 kS/s/ch	Channel-earth isolation, built-in open-loop detection

Digital I/O

Signal Type	Channel Count	Measurement Types	Max Sample Rate	Special Features
Input/Output	Up to 32	Options for TTL (3.3 V or 5 V) RS422, 5 V, 12 V, 24 V, 48 V, 72 V, 96 V, 120 V AC, 120 V DC, 240 V AC, 240 V DC	55 ns	Up to channel-channel isolation, sinking or sourcing input, bidirectional channel options
Relay Output	Up to 8	Options for 60 V DC, 30 V_{rms}, 250 V_{rms}	1 operation/s	Up to channel-channel isolation, SPST, or SSR relays

Communication Buses

Signal Type	Channel Count	Measurement Types	Max Sample Rate	Special Features
CAN	1	HS/FD, LS/FT CAN	1 Mb/s	—
LIN	1	LIN	20 kb/s	—
Serial Interface	4 ports	RS232, RS485/RS422	921.6 kb/s	—

Module Selection

The following table lists C Series modules by category. Use the individual tables to match your need to a part number. Can't find exactly what you're looking for? There are more than 70 C Series modules; contact your NI Product Expert or authorized reseller for help.

Module Selection Tables

Module Type	Page
Voltage Input	**18**
Voltage Output	**19**
Thermocouple	**19**
Accelerometer and Microphone	**20**
Bridge, Strain, Load, Pressure, Torque	**20**
RTD Temperature	**20**
Universal Input	**20**
Current Input	**21**
Digital Input and Output	**22**
Power (Current and 120+ VAC)	**23**

Module accessories are grouped by connector type. Use the "**Front Connector Type**" column in the module tables to find the matching accessory table in the accessories section starting on **page 24**.

Voltage Input Modules

Selection Criteria	Model	Part Number	Front Connector Type	Analog Input Resolution	Max Sample Rate	Differential Channels	Single-Ended Channels	Analog Input Voltage Range	Simultaneous Sampling
General Purpose	NI-9204	789114-01	D-SUB	16 Bits	250 kS/s	8	16	±10 V, ±5 V, ±1 V, ±200 mV	—
		789113-01	Spring Terminal						
Higher Channel Count	NI-9205	779357-01	D-SUB			16	32		
		785184-01	Spring-Terminal						
Faster Rate, High Density	NI-9220	782615-01	D-SUB		100 kS/s/ch		0	±10 V	
		785188-01	Spring-Terminal						
24-Bit Resolution, 250 V Channel-Channel Isolation	NI-9239	779593-01	Screw-Terminal	24 Bits	50 kS/s/ch				
		780181-01	BNC						
60 V Input Range	NI-9229	779785-01	Screw-Terminal					±60 V	
		780180-01	BNC						
Lowest Cost, Simultaneous Sampling	NI-9215	779011-01	Screw-Terminal	16 Bits	100 kS/s/ch	4	0	±10 V	✓
		779138-01	BNC						
		783739-01	Spring-Terminal						
Highest Speed, Simultaneous Sampling	NI-9223	781398-01	Screw-Terminal		1 MS/s/ch				
		783284-01	BNC						
Medium Speed, Medium Cost	NI-9222	781397-01	Screw-Terminal		500 kS/s/ch				
		783283-01	BNC						
Selectable Filter, Noise Rejection	NI-9202	784399-01	D-SUB	24 Bits	10 kS/s/ch	16			
		784400-01	Spring-Terminal						
Digitizer Functionality	NI-9775	784539-01	BNC	14 Bits	20 MS/s/ch		4		
Low Cost, High-Speed, 12-Bit	NI-9201	779013-01	Screw-Terminal	12 Bits	500 kS/s	0	8		—
		779372-01	D-SUB						
		783730-01	Spring-Terminal						

Voltage Output Modules

Selection Criteria	Model	Part Number	Front Connector Type	Analog Output Resolution	Max Update Rate	Analog Output Channels	Analog Output Voltage Range	Max Current Drive	Analog Output Isolation
General Purpose	NI-9264	780927-01	D-SUB	16 Bits	25 kS/s/ch	16	±10 V	4 mA	60 VDC Channel-Earth Ground Isolation
		785190-01	Spring-Terminal						250 V$_{rms}$ Bank Isolation
Lower Cost, Fewer Channels, Faster	NI-9263	779012-01	Screw-Terminal		100 kS/s/ch	4		1 mA	250 V$_{rms}$ Channel-Earth Ground Isolation
		783740-01	Spring-Terminal						250 V$_{rms}$ Channel-Earth Ground Isolation
Channel-Channel Isolated Output, 40 V Range	NI-9269	781098-01	Screw-Terminal					10 mA	250 V$_{rms}$ Channel-Channel Isolation

Thermocouple

Thermocouple Modules

Selection Criteria	Model	Part Number	Front Connector Type	Channel Count	Input Range	Max Sample Rate
General Purpose	NI-9213	785185-01	Spring-Terminal	16	±78 mV	75 S/s
More Accuracy (0.37 °C Benchmark)	NI-9214	781510-01	Screw-Terminal			68 S/s
Channel-Channel Isolation or TC Minijack Connectors	NI-9212	782975-01	Screw-Terminal	8		95 S/s/ch
		785259-01	Miniature Thermocouple (mini-TC)			

Accelerometer and Microphone Modules

Selection Criteria	Model	Part Number	Front Connector Type	Channel Count	Input Voltage Range	IEPE Excitation	Max Sample Rate
General Purpose	NI-9234	779680-01	BNC	4	±5 V	2 mA	51.2 kS/s/ch
2X Faster Sample Rate, 30 V Range	NI-9232	782000-01	Screw-Terminal	3	±30 V	4 mA	102.4 kS/s/ch
		784397-01	BNC				
More Channels per Module	NI-9231	783610-01	10-32 Coaxial	8	±5 V	2 mA	51.2 kS/s/ch
Lower Cost	NI-9230	783824-01	Screw-Terminal	3	±30 V	4 mA	12.8 kS/s/ch
		784396-01	BNC				

Bridge, Strain, Load, Pressure, and Torque Modules

Selection Criteria	Model	Part Number	Front Connector Type	Channel Count	Analog Input Voltage Range	Bridge Configurations	Max Sample Rate
General Purpose	NI-9237	779521-01	RJ50	4	±25 mV/V	Quarter-Bridge Half-Bridge Full-Bridge	50 kS/s/ch
		780264-01	D-SUB			Full-Bridge Quarter-Bridge Half-Bridge	
More than 2X 120 Ω Quarter-Bridge Sensors	NI-9235	785995-01	Spring-Terminal	8	±29.4 mV/V	Quarter-Bridge	10 kS/s/ch

RTD Temperature Modules

Selection Criteria	Model	Part Number	Front Connector Type	Channel Count	Input Range	Max Sample Rate
General Purpose	NI-9216	783863-01	D-SUB	8	0–400 mΩ	400 S/s
		785186-01	Spring-Terminal			

Universal Input Modules

Selection Criteria	Model	Part Number	Front Connection Type	Max Sample Rate	Channel Count	Analog Input Isolation	Electrical Signal Measured	Supported Sensor Type
General Purpose	NI-9219	785994-01	Spring-Terminal	100 S/s/ch	4	250 V_{rms} Channel-Channel Isolation	Voltage, Current, Temperature, Strain (V, mA, TC, RTD, Strain, Ω, IEPE)	Bridge, RTD, Thermocouple

Current Input Modules

Selection Criteria	Model	Part Number	Front Connector Type	Channel Count	Analog Input Resolution	Input Current	Max Sample Rate	Analog Input Isolation
General Purpose	NI-9203	779516-01	Screw-Terminal	8	16 Bits	±20 mA	200 kS/s	250 V_{rms} Channel-Earth Ground Isolation
		783731-01	Spring-Terminal					
More Channels per Module, 24-Bit, 50/60 Hz Rejection	NI-9208	780968-01	D-SUB	16	24 Bits		500 S/s	60 VDC Channel-Earth Ground Isolation
		785041-01	Spring-Terminal					250 V_{rms} Channel-Earth Ground Isolation

Digital Input and Output Modules

Selection Criteria	Model	Part Number	Front Connector Type	DIO Isolation	DIO Logic Levels	Max Update Rate	Bidirectional Digital Channels	Digital Input-Only Channels	Digital Input-Only Channels
Industrial DIO	NI-9375	781030-01	D-SUB	60 VDC Channel-Earth Ground Isolation	12 V	7 µs	0	16	16
		785192-01	Spring-Terminal	250 V_{rms} Channel-Earth Ground Isolation					
General Purpose TTL	NI-9401	779351-01	D-SUB	60 VDC Channel-Earth Ground Isolation	5 V TTL	100 ns	8	0	0
High-Channel-Count TTL	NI-9403	779787-01				7 µs	32		
Industrial DI	NI-9421	779002-01	Screw-Terminal	250 V_{rms} Channel-Earth Ground Isolation	12 V 24 V	100 µs	0	8	0
		779136-01	D-SUB	60 VDC Channel-Earth Ground Isolation					
		783734-01	Spring-Terminal	25 V_{rms} Channel-Earth Ground Isolation					
High-Channel-Count 24 V DI	NI-9425	779139-01	D-SUB	60 VDC Channel-Earth Ground Isolation		7 µs		32	
		785044-01	Spring-Terminal	250 V_{rms} Channel-Earth Ground Isolation					
Industrial DO	NI-9472	779004-01	Screw-Terminal	250 V_{rms} Channel-Earth Ground Isolation		100 µs		0	8
		779137-01	D-SUB	60 VDC Channel-Earth Ground Isolation					
		783907-01	Spring-Terminal	250 V_{rms} Channel-Earth Ground Isolation					
High-Channel-Count 24 V DO	NI-9476	779140-01	D-SUB	60 VDC Channel-Earth Ground Isolation		500 µs			32
		785045-01	Spring-Terminal	250 V_{rms} Channel-Earth Ground Isolation					

Power (Current and 120+ VAC) Modules

Power (Voltage Input) Modules

Selection Criteria	Model	Part Number	Front Connector Type	Analog Input Isolation	Analog Input Resolution	Analog Input Voltage Range	Max Differential Analog	Max Single-Ended Analog	Max Sample Rate	Simultaneous Sampling
240 VAC	NI-9242	783107-01	Screw-Terminal	250 V_{rms} Channel-Earth Ground Isolation	24 Bits	400 V_{rms}	0	3	50 kS/s/ch	✓
480 VAC	NI-9244	783106-01		400 V_{rms} Channel-Earth Ground Isolation						
Channel-Channel ISO Voltage	NI-9225	780159-01		600 V_{rms} Channel-Channel Isolation		300 V_{rms}	3	0		
Connects to 0.33 V CTs	NI-9238	783311-01		250 V_{rms} Channel-Channel Isolation		-500 mV to 500 mV	4			

Power (Current Input) Modules

Selection Criteria	Model	Part Number	Front Connector Type	Analog Input Isolation	Analog Input Resolution	Measure Current	Max Differential Analog	Max Single-Ended Analog	Max Sample Rate
Connects to 5 A CTs (20 A Range)	NI-9246	783920-01	Ring-Terminal	480 V_{rms} Channel-Channel Isolation	24 Bits	0 A_{rms} to 20 A_{rms}	3	0	50 kS/s/ch
High Accuracy, Low Range	NI-9227	781099-01	Screw-Terminal						

CompactDAQ Chassis and Power Cords

CompactDAQ Chassis

Model	Part Number	Connection to PC	Number of Modules Chassis Can Hold	Synchronized Measurements Between Chassis	Built-In Digital Trigger	Operating Temperature
cDAQ-9171	781425-01	USB 2.0	1	—	—	-20 °C to 55 °C
cDAQ-9174	781157-01		4		—	
cDAQ-9178	781156-01		8		✓	
cDAQ-9179	783597-01	USB 3.0	14		✓	
cDAQ-9181	781496-01	Ethernet	1		—	0 °C to 55 °C
cDAQ-9183	789996-01		4	✓	—	-40 °C to 70 °C
cDAQ-9185	785064-01				✓	
cDAQ-9187	789997-01		8		—	
cDAQ-9189	785065-01				✓	

CompactDAQ Chassis Power Cords[1]
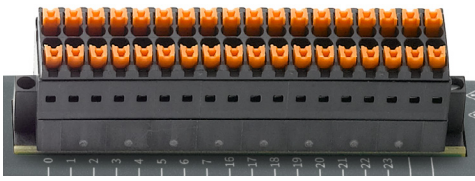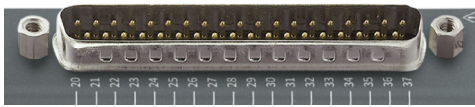
Power Cord	Length (m)	Max Current (A)	Part Number
United States 120 VAC	2.3		763000-01
United Kingdom 240 VAC	2.5	10	763064-01
Swiss 220 VAC			763065-01
Australia 240 VAC			763066-01
European 240 VAC, Right Angle			763067-01
North America 240 VAC	3		763068-01
Japan 125 VAC	2.3	15	763634-01
India 250 VAC	2.5	10	763072-01
Korea 220 VAC			784685-01
China 220 VAC			784686-01
Brazil 127/220VAC			785626-01

[1]Power cords are required if you're using a desktop power supply. If using an industrial power supply, the CompactDAQ chassis does not need a power cord. Instead, wire it directly to the power supply.

C Series Module Accessories

Accessories are organized by front connector type.

Front Connector Types

| Module Connector Type	Description	
BNC	BNC connectors have two signal pins and secure the cable to the module with a quarter-turn coupling nut. It is ideal for single-ended measurements. Because the BNC connector has two pins, it doesn't provide a true differential measurement, which requires three pins.	
Screw-Terminal	Screw-terminal connection options require a flat-bladed screwdriver to close a metal gate that clamps down on exposed signal wire.	
10-32 Coaxial	The 10-32 coaxial jack, or "Microdot," uses two pins for the connection with a threaded collar to screw the cable in place. This is a common connector for accelerometers and microphones with space constraints.	
Spring-Terminal	Spring-terminal connections use a spring mechanism inside the connector to clamp down on exposed signal wires. Use a small, flat-bladed precision screwdriver to open the cage clamp. Remove the screwdriver after inserting the exposed signal wire.	
D-SUB	D-SUB connections, named for the D-shaped metal shell, are a mass termination option that uses a pin-and-socket connection.	

This table provides general descriptions and images of accessories for C Series modules.

Accessories

Term	Definition	
Backshell	This component surrounds the male or female cable connector to protect the cable connections and provide cable strain relief.	
EMI Suppression Ferrite	This passive electrical component clamps around a cable to reduce electromagnetic interference on the line.	
DIN-Rail-Mount Terminal Block	This mounts a connector block to a DIN rail.	
Front-Mount Terminal Block	This connector block connects to the front of the module.	
Screw-Terminal Block	This type of connector block uses screw terminals as the method for connecting wires to a sensor. (included with module)	
Spring-Terminal Block	This connector block uses spring terminals to connect wires to a sensor (included with module).	

D-SUB Accessories

D-SUB connectors are an industry-standard connector with cables and accessories readily available from a variety of distributors. NI C Series modules use 37-, 25-, and 15-pin versions of the D-SUB connector. All D-SUB module accessories are sold separately. You must purchase accessories to connect to a module.
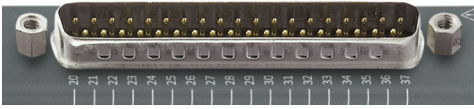
37-Pin D-SUB Connector on C Series Module NI-9205 (Male Connection)
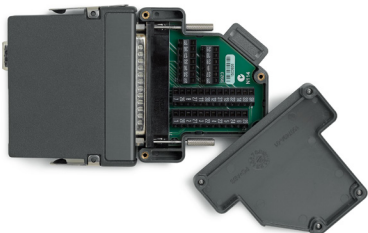
C Series Modules with D-SUB Connectivity

25-Pin D-SUB		37-Pin D-SUB	
Model	Part Number	Model	Part Number
NI-9421	779136-01	NI-9425	779139-01
NI-9472	779137-01	NI-9205	779357-01
NI-9401	779351-01	NI-9403	779787-01
NI-9201	779372-01	NI-9264	780927-01
NI-9221	779373-01	NI-9208	780968-01
		NI-9375	781030-01
		NI-9220	782615-01
		NI-9216	783863-01
		NI-9202	784399-01

25-Pin D-SUB Accessories

D-SUB modules require purchase of either a front mount terminal block or a cable and terminal block for signal connections.

Description	Part Number	Selection Criteria	
Front-Mount Terminal Block	781922-01	Disconnect multiple wires at once (recommended)	
Cable	192568-01	1 m	
	192568-02	2 m	
Mounting	781081-01	DIN rail-mount terminal block	

37-Pin D-SUB Accessories

D-SUB modules require purchase of either a front mount terminal block or a cable and terminal block for signal connections.

Description	Part Number	Selection Criteria	
Front-Mount Terminal Block	781503-01	Disconnect multiple wires at once (recommended)	
Cable	778621-01	1 m	
	778621-02	2 m	
	782316-04	Shielded, low-profile D-SUB-to-pigtail, 4 m	
	778620-04	D-SUB-to-pigtail, 12 ft.	
	154302-01	Low-profile, 1 m	

37-Pin D-SUB Accessories (continued)

Description	Part Number	Selection Criteria	
Mounting	778673-01	Screw-terminal block with horizontal DIN rail mount	
	778676-01	Spring-terminal block with horizontal DIN rail mount	

Screw-Terminal Accessories

C Series Modules with Screw-Terminal Connectivity

Modules with screw-terminal connectivity ship with everything needed to connect a signal wire. Purchase terminals as spares or replacements. Purchase the backshell as an optional accessory for strain relief.

Two-Position		Four-Position		10-Position	
Model	Part Number	Model	Part Number	Model	Part Number
NI-9239	779593-01	NI-9244	783106-01	NI-9421	779002-01
NI-9229	779785-01	NI-9242	783107-01	NI-9472	779004-01
NI-9225	780159-01			NI-9215	779011-01
NI-9269	781098-01			NI-9263	779012-01
NI-9227	781099-01			NI-9201	779013-01
NI-9222	781397-01			NI-9203	779516-01
NI-9223	781398-01				
NI-9232	782000-01				
NI-9238	783311-01				
NI-9230	783824-01				

Two-Position Screw-Terminal Accessories

Part Number	Selection Criteria	
196375-01	Backshell for strain relief (Quantity 4)	
196739-01	Extra connectors (Quantity 10)	

Accessories for NI-9242/44 High-Voltage Modules

Part Number	Selection Criteria	
783094-01	Backshell ships with the NI-9242, purchase as spare or replacement (included in shipping kit)	
783154-01	Backshell ships with the NI-9244, purchase as spare or replacement (included in shipping kit)	

10-Position Screw-Terminal Accessories

Part Number	Selection Criteria	
782715-01	Backshell for strain relief (Quantity 1)	
779105-01	Extra connectors (Quantity 10)	

Spring-Terminal Accessories

C Series Modules with Spring-Terminal Connectivity

Modules with screw-terminal connectivity ship with everything needed to connect a signal wire. Purchase terminals as spares or replacements. Purchase the backshell as an optional accessory for strain relief.

Six-Position		10-Position		24-Position		36-Position	
Model	Part Number	Model	Part Number	Model	Part Number	Model	Part Number
NI-9219	785994-01	NI-9201	783730-01	NI-9235	785995-01	NI-9202	784400-01
		NI-9203	783731-01			NI-9208	785041-01
		NI-9421	783734-01			NI-9425	785044-01
		NI-9215	783739-01			NI-9476	785045-01
		NI-9263	783740-01			NI-9205	785184-01
		NI-9482	783906-01			NI-9213	785185-01
		NI-9472	783907-01			NI-9216	785186-01
						NI-9220	785188-01
						NI-9264	785190-01
						NI-9375	785192-01

Six-Position Spring-Terminal Accessories

(NI-9219 Universal Module only)
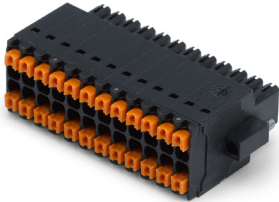
Part Number	Selection Criteria	
786162-01	Backshell for strain relief (Quantity 4)	
785993-01	Extra connectors (Quantity 4)	

10-Position Spring-Terminal Accessories

Part Number	Selection Criteria	
783787-01	Backshell for strain relief and operator protection (Quantity 1)	
197991-01	Extra connectors (Quantity 10)	

Recommended 24-Position Spring-Terminal Accessories with Mini-TC

(NI-9235 strain gage module only)

Part Number	Selection Criteria	
786217-01	Backshell for strain relief (recommended)	
785992-01	Extra connectors (Quantity 1)	

36-Position Spring-Terminal Accessories

Part Number	Selection Criteria	
785080-01	Backshell for strain relief (Quantity 1)	
785502-01	Extra connectors (Quantity 1)	

BNC Accessories

C Series Modules with BNC Connectivity

Model	Part Number
NI-9234	779680-01
NI-9229	780180-01
NI-9239	780181-01
NI-9222	783283-01
NI-9223	783284-01
NI-9215	779138-01
NI-9230	784396-01
NI-9232	784397-01
NI-9775	784539-01

BNC Accessories

Part Number	Selection Criteria	
159103-02	50 Ω BNC-BNC Cable, 2 m	
779697-02	75 Ω BNC-BNC Cable, 2 m	
782802-01	Ferrite For EMI Suppression[1]	

[1]This accessory is required for the NI-9230/9232.
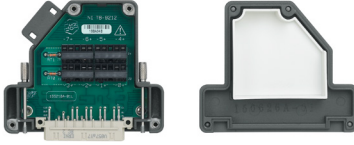
Specialty Connector Accessories—Mini-TC, DIN, Ring, RJ50

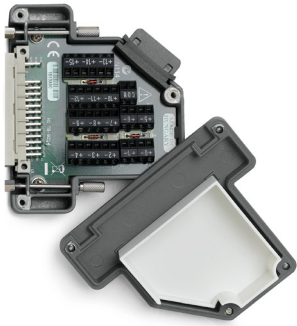### C Series Modules with Specialty Connectors

Mini-TC	Part Number	DIN	Part Number	RJ50	Part Number	Ring	Part Number
NI-9212	785259-01	NI-9214	781510-01	NI-9237	779521-01	NI-9246	783920-01

Accessories for NI-9212 Thermocouple Module

Part Number	Selection Criteria	
784486-01	Extra mini-TC front-mount terminal block for NI-9212	
783643-01	Extra screw-terminal front mount terminal block for NI-9212	

Accessories for NI-9214 Thermocouple Module with Screw Terminals

Part Number	Selection Criteria	
781511-01	Purchase terminal block for NI-9214 as spare/ replacement	

RJ50 Accessories

Note: The RJ50 connector is NOT compatible with standard Ethernet cables.

Part Number	Selection Criteria	
196809-01	RJ50 (female)-to screw-terminal adaptor (Quantity 4)	
194738-01	120 Ω quarter-bridge completion terminal block (Quantity 4)	
194739-01	350 Ω quarter-bridge completion terminal block (Quantity 4)	
194611-01	Connector and terminal kit for four-position micro-fit plug that you can use with the NI-9237	
194612-02	RJ50 cable, 2 m (Quantity 4)	
194612-10	RJ50 cable, 10 m (Quantity 1)	

Accessories for the NI-9246/47 Current Transformer Modules

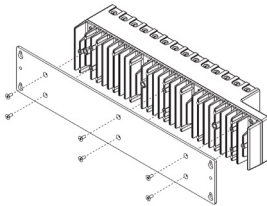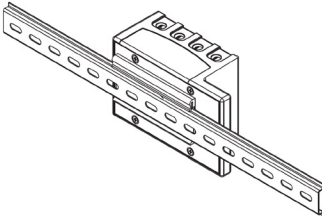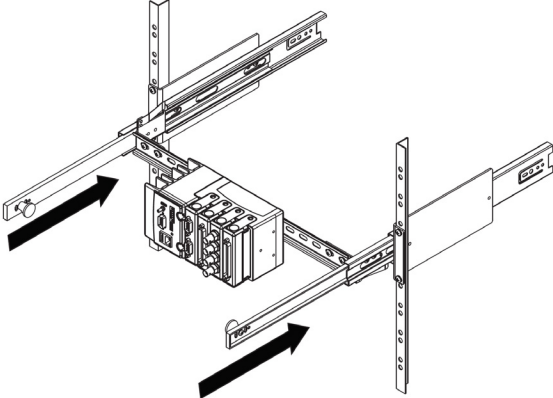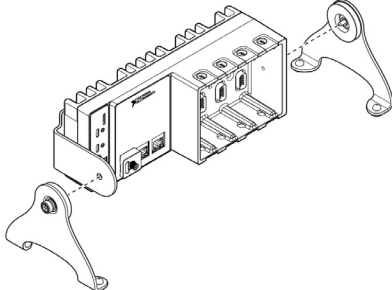| Part Number	Selection Criteria	
784300-01	Backshell for strain relief and operator protection for NI-9246/9247 (Quantity 1). Included in shipping kit. Purchase as replacement.	

[1]Power cords are required if you're using a desktop power supply. If using an industrial power supply, the CompactDAQ chassis does not need a power cord. Instead, wire it directly to the power supply.

CompactDAQ Chassis Accessories

Mechanical mounting and fixturing is a critical element of a design validation test system. Use the following tables to select a mounting kit as you work through the physical design of your system.

Mounting Kits

Types of Mounting Kits

Type	Selection Criteria and Considerations	
Panel	Use to mount CompactDAQ chassis on flat surfaces Recommended for high shock and vibration applications	
DIN Rail	Mount CompactDAQ chassis and controllers to any standard 35 mm DIN rail Industrial power supplies have DIN mounting options Don't ship systems on DIN rail without considering shock impacts of traditional shipping methods	
Rack-Mount	Use to mount a CompactDAQ chassis on a standard 19-inch rack I/O cables for CompactDAQ systems all come out the same direction Consider space for terminal blocks, power supplies, and cable management	
Desktop	Use for easier access to I/O terminals when working on a desk or benchtop	

Mounting Kits for CompactDAQ Chassis

Type	Part Number	Selection Criteria
Panel	781722-01	Horizontal Panel Mounting Kit for 9181/91 Chassis
	779097-01	Horizontal Panel Mounting Kit for 4-Slot Chassis
	779558-01	Horizontal Panel Mounting Kit for 8-Slot Chassis
	784303-01	Horizontal Panel Mounting Kit for 14-Slot Chassis
DIN Rail	779019-01	For 4-Slot cRIO-910x/911x/906x/907x and cDAQ-917x/918x
	781740-01	For NI-9181/9191 Chassis
	779018-01	For 8-Slot cRIO-910x/911x/906x/907x and cDAQ-917x/918x
	157254-01	For 4-Slot cRIO-903x/904x/905x and cDAQ-9132/34/36
Rack	786411-01	Industrial Rack-Mount Kit for CompactRIO and CompactDAQ
Desktop	779473-01	For Any CompactDAQ Chassis

Power Supplies

CompactDAQ chassis must be purchased with a 9–30 VDC output power supply (refer to page **22**). This section contains alternate power supplies.

Power Supplies for CompactDAQ Chassis

Type	Part Number	Selection Criteria
Industrial	783167-01	24 VDC, 3.3 A, 100-240 VAC/110-300 VDC Input
	781094-01	24 VDC, 10 A, 100-120/200-240 VAC Input
Desktop	782698-01	24 VDC, 5 A, 100-240 VAC Input

See the white paper **CompactDAQ Controller and Chassis Mounting Accessories** for more information and images related to mounting CompactDAQ systems.

Use the CompactDAQ advisor to match the right mounting accessories to your chassis. See the **Configuring and Buying a System Online** section.
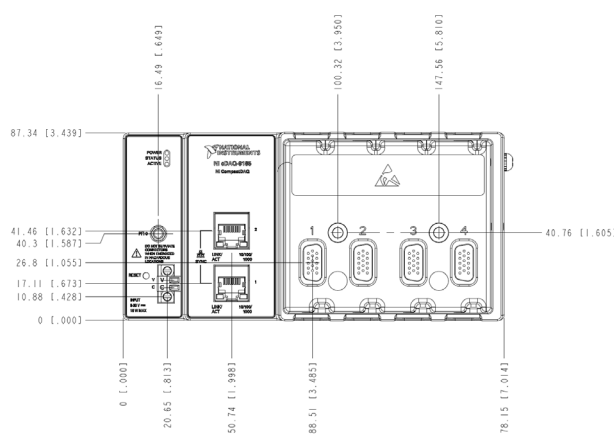
2D Drawings and 2D CAD Files

FIGURE 4

2D dimensional drawings and 3D models are available on ni.com. Available file formats for the cDAQ-9185 (2D drawing shown in image) include PDF, DXF, PRT, STP, and IGS.

See the **Dimensional Drawings** support page and enter the product model number, for example, "cDAQ-9185," to access 2D drawings and CAD model files.

Grounding and Isolation

Safety and Instrument Protection

CompactDAQ modules are independently certified to be safe when used within specifications. Most modules feature hazardous location certifications and/or isolation. Each module is categorized into the following NI-defined isolation levels:

- 60 VDC continuous / 1000 V_{RMS} withstand
- 250 V_{RMS} continuous / 2300 V_{RMS} withstand
- 300 V_{RMS} continuous / 2300 V_{RMS} withstand

Field Wiring and Grounding

Knowing the nature of the signal source and relevant grounding configurations is required to produce accurate and noise-free measurements. Signal sources are broadly classified into two types:

- Grounded or ground-referenced signal source
- Ungrounded or nonreferenced (floating) signal source

A grounded signal source is best measured with a differential or nonreferenced measurement system. In a differential architecture, neither of the inputs is tied to a fixed reference such as earth or building ground. This is useful in rejecting noise, including the unwanted noise often introduced in the circuit that makes up the cabling system as common-mode voltage. One drawback to this approach is that you need twice the number of input channels as signals in your DAQ system. Alternatively, you can use a nonreferenced single-ended (NRSE) architecture that uses one channel per signal and measures each to the same pin usually labeled as AI Sense.

Grounding Resources

For more information, see the following resources:

Understanding and Trusting Isolation Specifications

Grounding Considerations—Intermediate Analog Concepts

Isolation from the Chassis Ground for NI DAQ Hardware

Different Types of Isolation

Helpful Tools for Your Toolbox

Consider these tools when planning CompactDAQ based test systems. These tools are not available from NI.

Tool	Use For	Search For
Precision screwdriver with 2.3 mm blade	Connecting wires to spring terminal modules such as the NI-9213	Screwdriver with 2.3 mm x 1 mm blade
Ferrule crimper and ferrules	Crimping the ends of stranded wires for screw terminal modules. Needed for high vibration environments and for connecting dual wires into a single terminal for some applications.	Ferrule crimper
Rivet nuts and rivet nut tool	Mounting the chassis to a metal panel that's in an enclosure. Thru-hole mounting with nut/bolt combination also works, but rivet nuts make it easier to service an installed panel. Use in combination with a chassis panel mount kit.	Rivet nuts
Hand crimp tool	Crimping 4-terminal connector on external excitation plug for NI-9237 module	Molex part number: 0638190000
RJ50 crimp tool and RJ50 connectors	Crimping sensor cables to turn wire leads into an RJ50 connection. (RJ50-RJ50 cable available as an accessory from NI)	RJ50 crimp tool
Standard Phillips head screwdriver	Ground lug on chassis and some of the strain-relief mounts on the modules	Phillips head screwdriver
Small-blade screwdriver	Connecting to module screw-terminals	Small-blade screwdriver
Wire cutting, splicing tools. Needle-nose pliers	Working with signal wires (typically gage 14–26)	Wire strippers and pliers
Electrical heat-shrink tubing	Creating clean wire connections. Available for a variety of conditions and environments.	Heat-shrink tubing
Soldering station (iron, solder, flux)	Creating custom mass-term connectors and cables for D-SUB or LEMO modules	Soldering equipment
Small plastic zip ties	Strain relief on wiring and cable clean-up	Zip ties
Wire nuts or other form of temporary connectors	Testing connections or creating removable wire junctions to multiple wires without a terminal block	WAGO Lever-Nuts or generic wire nuts

TABLE 1
Helpful Tools

Software Development and Operator Interface Considerations

Software is core to the cost, capability, and flexibility of test systems. Use the following considerations to design the right software technologies into your test system.

Available Programming Experience

Efficiently build your test system by aligning software technologies to team software capabilities. Consider the development skills on the team now, how easy those skills are to learn, and how quickly those skills could be contracted on short notice. It may make sense to contract a sub-component for a project if it's well scoped and not likely to need maintenance in the future. On the other hand, it may make sense to add developer skills training to the team for foundational projects that future test rigs will leverage.

If you are looking at LabVIEW, use the NI Partner Network to help with everything from architectural consulting to turn-key product delivery. Or improve your team's in-house development knowledge and ensure best practices with NI's Education Courses and certification programs.

If you're not looking to develop with LabVIEW, NI has one of the largest selections of programming language support for data acquisition, so you can find the support you need for Python, C, C++, Visual Basic 6.0, VB.NET, or C#. (See the Software Support Resources section.)

No programming experience on the team? No problem. FlexLogger data acquisition software covers key feature requirements for data acquisition, including a customizable user interface and alarms, so you can get the data you need to improve product quality without any programming.

Existing Code

Call existing code from LabVIEW-developed applications. Use LabVIEW for data acquisition, instrument control, UI development, and test automation. Use LabVIEW functions to call DLLs, Python script, or .m files from MathWorks® MATLAB® software. Leveraging code saves time and this approach lets you use the right tool for the job. For more information on integrating your existing IP into LabVIEW-designed applications, see the following support documentation:

- Overview of Accessing DLLs or Shared Libraries from LabVIEW
- Connecting LabVIEW to Third-Party Software Packages
- Integrating Python Code in LabVIEW
- Call Perl and Python Scripts from LabVIEW

Designing a Custom Application vs. Buying an Application

Developing a custom system in-house will meet 100 percent of test software requirements and let you control the system investment roadmap. In-house systems are not without cost though; be sure to factor in maintenance, training, and upgrades when investigating total cost of system ownership.

Benefits of buying off-the-shelf tools include vendor support, maintenance, and official training or an ecosystem of supporting content. But platform investments, the feature roadmap, and support are controlled by the vendor and could be deprecated.

FlexLogger is an off-the-shelf application that covers data acquisition and logging so teams can save developer resources for tasks better aligned to the team's mission.

Use the NI-DAQmx API to develop a custom system in-house system with the programming language that best suits the needs of your system and capabilities of the team.

Data File Formats

One very important consideration for file formats is open standard versus custom format. An example of a common, open format is the CSV file which is human readable and great for sharing data because Excel and other CSV-compatible applications are ubiquitous. The downside is file I/O performance, especially for high-channel-count systems or measurements with acquisition rates in the 10 kHz+ range.

In-house binary formats are common because they are tailored to the needs of the system for maximum optimization. The downside is the limited ability to share raw data from the system without writing conversion programs, along with the risk of losing access if file documentation is lost. "Jane was the only one who knew the file schema and she just won the lottery and left the company."

NI recommends the TDMS format for logging dynamic waveform data to disk. A TDMS file uses an open binary format so your system has the performance of binary and the documented benefits of an open-source format. Several vendors advertise support for TDMS file formats, though many label support as "DIAdem file support" after the analysis package that originated the file format. See **The NI TDMS File Format** for more information on TDMS files.

Operator Interface

User interface features have an impact on application development and required software technologies. Does the operator just push a button and sit back

waiting for the file? Are there live data updates on the screen? What about web access? LabVIEW is known for UI functionality in data acquisition systems, and **G Web Development Software** makes test stations accessible anywhere in the world. These features add development time and cost but can improve test coverage (product quality) and reduce test time.

FIGURE 5

Demand for remote access to test systems is increasing. Use G Web Development Software with LabVIEW to build viewers that run in standard web browsers so design teams and test teams can collaborate faster.

For the non-programming option, operators can configure FlexLogger UIs while the project is running to adjust to what is happening during the test. This manages variances in test setup criteria that may not have been considered—or couldn't have been considered—before the DUT was connected. By contrast, for a simplified experience, the UI panels can be pre-built and locked down.
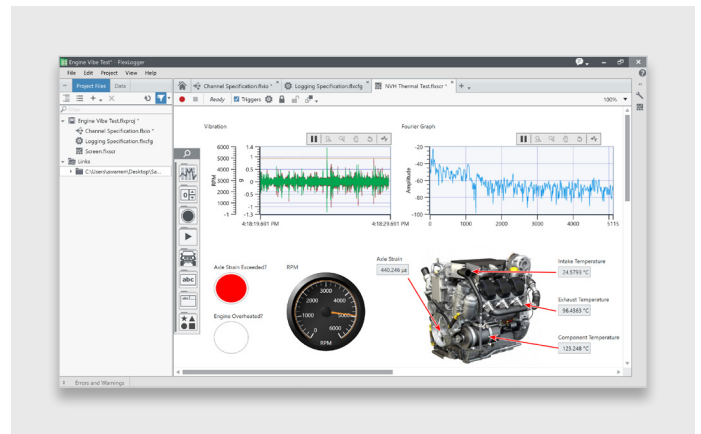

FIGURE 6

Configure flexible UIs with FlexLogger that are useful and intuitive to operators.

Software Support Resources

Use this section to prepare the PC you're connecting to CompactDAQ. Install the latest **NI-DAQmx driver** for programming support in LabVIEW, C, C++, Visual Basic 6.0, VB.NET, C#, and Python. Contact MathWorks for MATLAB support using **Data Acquisition Toolbox™**.

API Support Resources

For programming with LabVIEW, see the **Getting Started with CompactDAQ Hardware and LabVIEW** tutorial for links to LabVIEW development software, how-to videos for taking a measurement, and links to other helpful resources.

For programming with Python, see the **NI-DAQmx Python Documentation** and associated link to **GitHub** for the latest source.

For programming with C and .NET, see the **NI-DAQmx in Text Based Programming Environments** supplemental documentation.

FlexLogger Getting Started Resources

For configuring a data acquisition system without programming, see the **Getting Started with CompactDAQ Hardware and FlexLogger** tutorial.

For help scripting FlexLogger with Python, see **niflexlogger-automation-python** on GitHub for an API and examples.

Configuring and Buying a System Online

Use this section for help using NI's online tools for configuring, quoting, and ordering a system.

Starter Configurations

The following system configurations contain a chassis, popular measurement modules, hardware accessories, and FlexLogger data acquisition software. Use these configurations as a starting point for a test system or for a discussion with a technical expert from NI or authorized NI distributor.

- Expandable Thermocouple Data Acquisition System
- Sound and Vibration Data Acquisition System
- Load, Pressure, Force, and Strain Test System
- Mixed-Sensor Electromechanical Test System (voltage, current, thermocouple, DIO)

Using the CompactDAQ System Advisor

Use the CompactDAQ system advisor to find the right accessories for your chassis and modules. Start from one of the previous configurations.
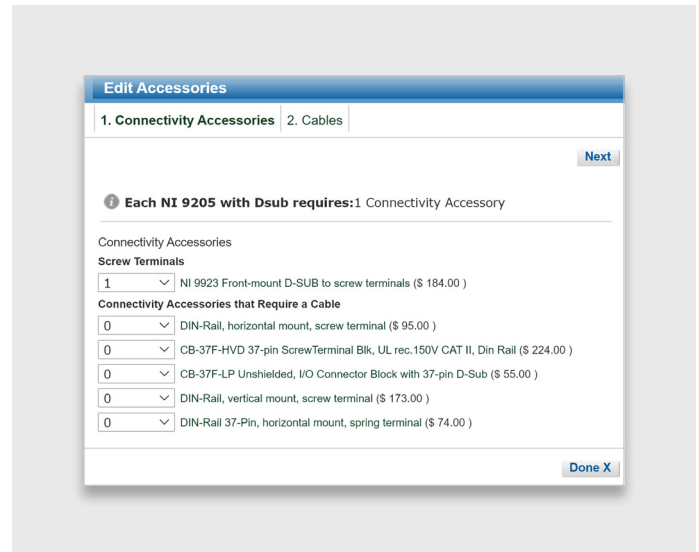
FIGURE 7

The Edit Accessories window shown in this screenshot lists the types of accessories needed along with the available options for that specific module. For example, the NI-9205 with D-SUB has several terminal block options that require a cable. Select cables on the tab labeled "2. Cables." Many of the accessories listed are links to model pages with images of the accessory.
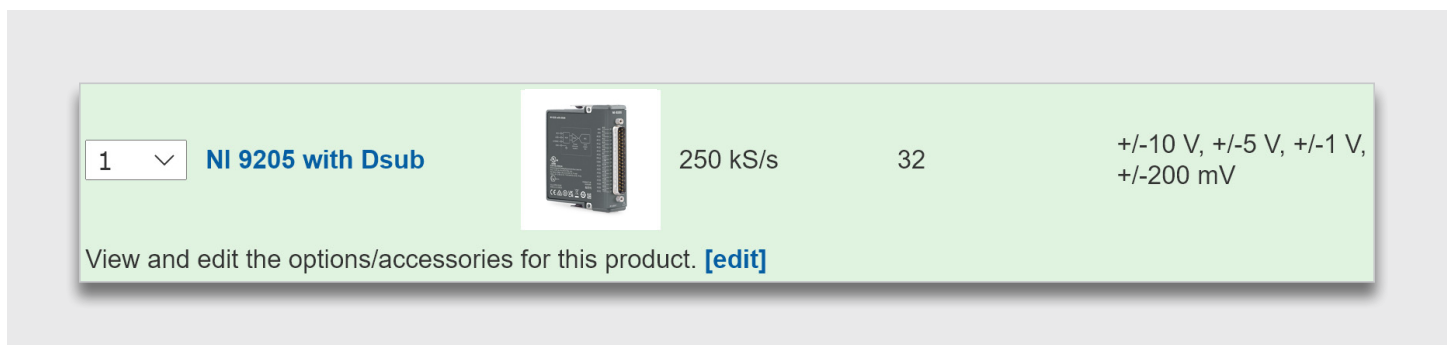
FIGURE 8

In order to see accessories designed to work with a particular connector type, click the [edit] link as depicted in this screenshot once you have selected the correct module.
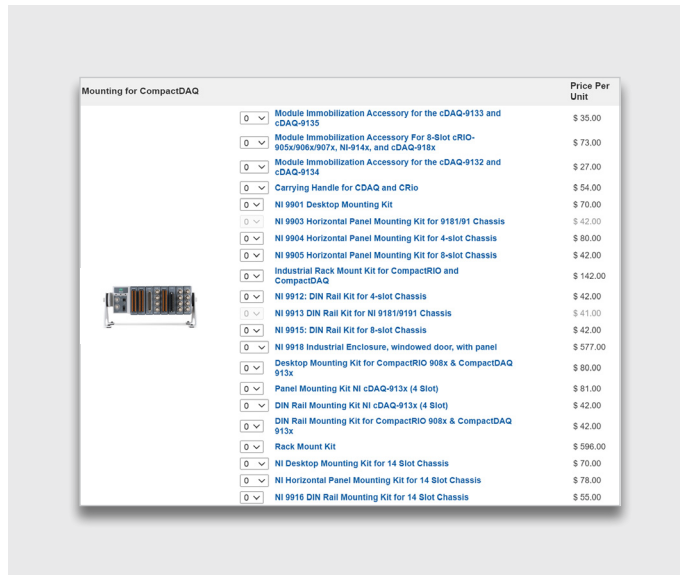
FIGURE 9

The system accessories tab in the advisor includes part lists for AC power cords, industrial power supplies, Ethernet cables, mounting accessories (shown in screenshot), and more.
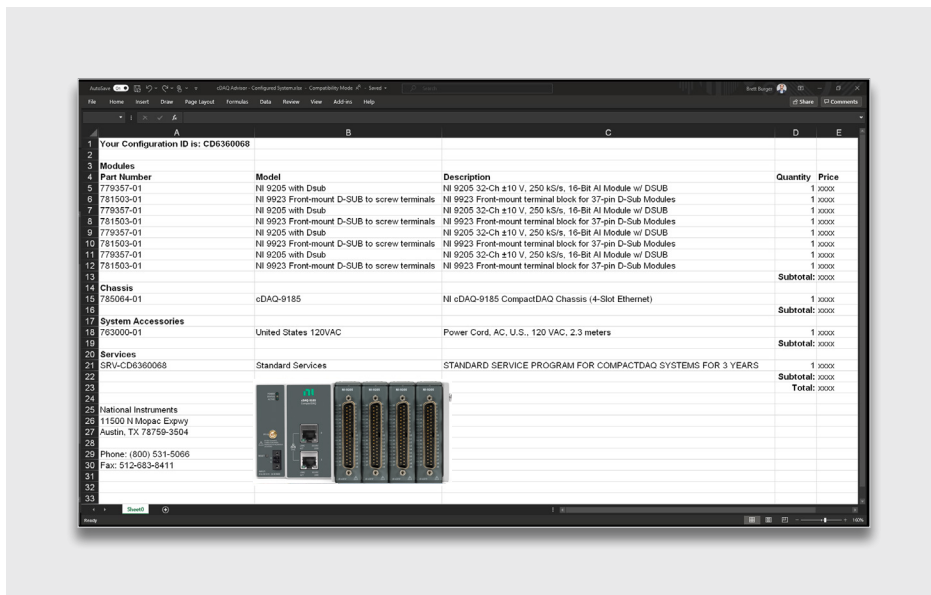

FIGURE 10

You can export your entire system configuration to a Microsoft Excel file from the advisor, including software, services, and accessories. Note: the chassis system image shown in this image was also created from the advisor but required copy/paste addition to Excel spreadsheet.

NI Partner Network

The NI Partner Program offers domain, application, and overall test development expertise to help your team get ahead and stay ahead:

- Innovate faster with proven scalable solutions
- Reduce development time and cost through integration and consulting assistance

Types of Partners

Solution Partners
- Experts in delivering products and solutions to solve your specific automated test or automated measurement application challenges.

System Integrators
- Specialists in integrating and deploying test and measurement systems, based on your specific requirements and their mature industry capabilities.

Consultants
- Experts in project services in areas such as software development, engineering, science, analytics, regulatory compliance, or other specialized skills to support complex systems.

Distributors
- Globally and regionally accessible, authorized distributors with local knowledge and an understanding of the available NI product portfolio, providing a one-stop option for configuring and sourcing your project needs.

Connect with our global community of trusted NI Partners ready to give your business a competitive edge. Find a partner or solution at ni.com/findapartner.
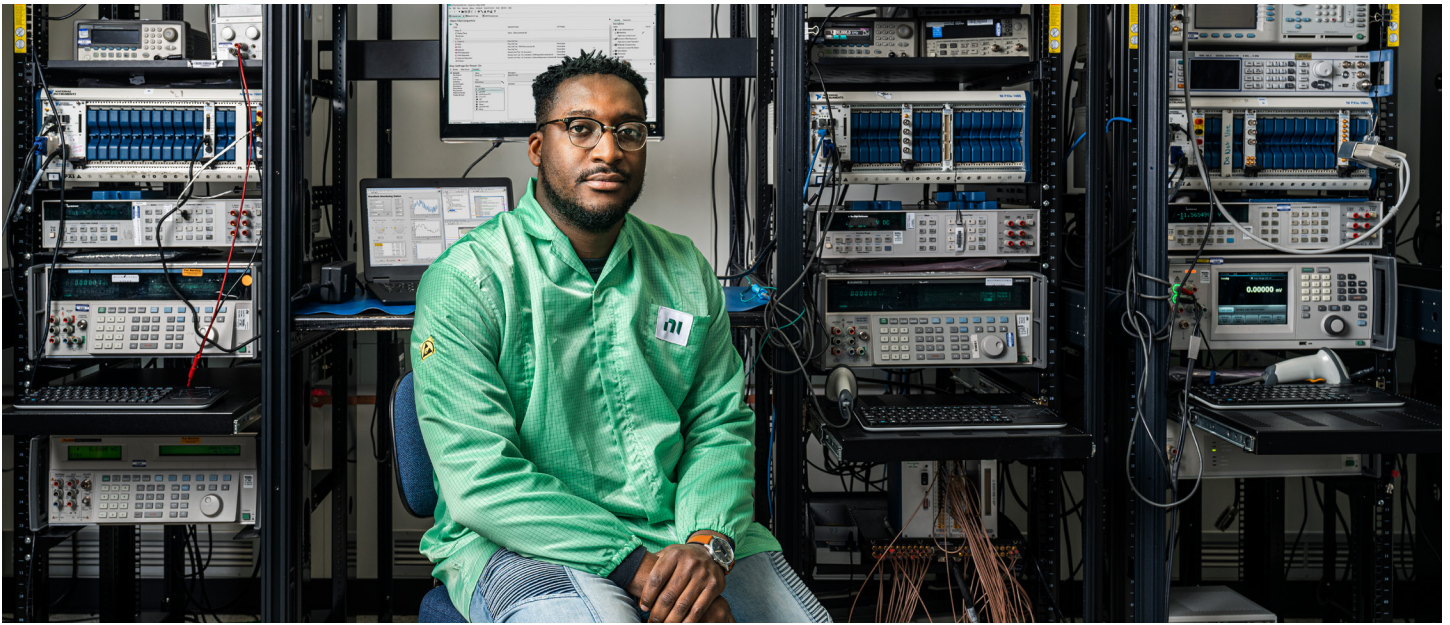
Services

NI offers a variety of services to ensure you can be successful throughout the lifecycle of your application. With global solution centers, NI engineers in more than 40 countries, and a vast network of more than 900 NI Partners, NI service programs help you mitigate risks, develop faster, and reduce costs to achieve your goals.

Hardware Services

From the moment you unbox your hardware to deployment and maintenance, NI hardware services help you get started quickly and operate efficiently throughout the lifecycle of your test system.

Entitlement	Hardware Warranty	Standard	Premium	Description
Duration at Point of Sale	1 Year; Included	3 Years; Optional	3 Years; Optional	NI enhances warranty coverage with additional service benefits provided with a hardware service program.
Maximum Duration with Renewal	≤5 Years with Service Program	≤5 Years	≤5 Years	NI maintains high performance and availability of your hardware for up to 5 years with a hardware service program. For coverage beyond 5 years, NI provides lifecycle service options.
Extended Repair Coverage (3 or 5 years)	✓	✓	✓	NI restores your device's functionality and includes firmware updates and factory calibration.
System Configuration, Assembly, and Test	—	✓	✓	NI technicians assemble, install software on, and test your system per your custom configuration prior to shipment.
Advanced Replacement	—	—	✓	NI stocks replacement hardware that can be shipped immediately if a repair is needed.
System RMA	—	—	✓	NI accepts the delivery of fully assembled systems when performing repair services.
Technical Support	✓	✓	✓	NI provides access to support resources for your hardware.
Calibration Plan (Optional)	—	Standard	Expedited	NI performs the requested level of calibration at a specified calibration interval for the duration of the service program.

Education Services

Education Services incorporate courses and certification programs from NI to help you proficiently develop applications, work with NI hardware, and more. You can apply your knowledge to reduce development time and increase productivity.

Customer Education Courses

Attending on-location or in virtual classrooms and labs, gain knowledge on everything from fundamentals to advanced specifics and become familiar with NI hardware and software.

Training Entitlements

You can gain unique and unlimited access to all NI training courses and certification programs using credits or a training membership.

Certification Program

With certifications from associate developer to architect for LabVIEW and NI TestStand software, you can join the ranks of the thousands of engineers with NI professional certifications.

NI provides flexible options for purchasing training and certification. Whether you want to make an upfront investment or pay as you go, NI meets you at your budgetary needs.

Save money with a training membership

A training membership is a cost-effective way to take multiple instructor-led training courses. This program provides one year of unlimited access to instructor-led training and certification.

Buy credits now, schedule later

Purchase Education Services Credits now and redeem later for any training or certification offering. Education Services Credits expire after one year.

Secure a seat in a public course

View NI's global training calendar and secure a seat in an upcoming virtual or classroom instructor-led course.

Take advantage of on-demand learning

NI software licenses include one-year access to introductory on-demand learning content so you can onboard quickly. Additional on-demand courses are available for purchase.

Organize a private training event

NI offers private training events for teams of up to 12 students. Private training events can leverage standard NI training courses and include custom materials tailored to your needs.

Technical Support Services

With the knowledge, experience, and responsiveness of NI applications engineers in more than 30 languages and 40 countries, NI has the technical support resources to ensure your success.

Access Your NI Standard Technical Support:

Included with Software
- Technical support included with your software subscription license

Included with NI Hardware Warranty
- One year of standard technical support is included with all NI hardware through your hardware warranty

Be a benchtop superhero.

Get NI performance and precision with entry-level DAQ devices.

Visit ni.com/shop to explore NI's full portfolio of products designed to help you.