CompactDAQ Chassis Options and Comparison

Modular Data Acquisition Hardware; Pair with C Series Modules

Navigation

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CompactDAQ Chassis Options and Comparisons

NI C Series modules need to be inside a chassis to collect and log data.

Chassis Considerations

- What bus communication do you need (**USB or Ethernet**)?
- How many different measurement modules will you need in a specific location (**Slot Count**)?
- Do you need an **onboard trigger**?
- What is the **temperature range of the environment** you will be testing in?
- Is **synchronization** of measurements across multiple test systems a test requirement?

USB Bus Connected Chassis

USB is practical for portable measurements and convenient because connectivity is easy and ubiquitous. USB devices are not recommended for closed-loop control applications.

Model	Image	Part number	Slot Count	Onboard Trigger	Synchronization Enabled	Operating Temperature Range
cDAQ-9171**		781425-01	1	No	No	-20 °C to 55 °C
cDAQ-917**		781157-01	4			
cDAQ-9178		781156-01	8	Yes		
cDAQ-9179		783597-01	14			

Ethernet Bus Connected Chassis

Ethernet is ideal for remote and distributed measurements, particularly those that extend beyond the reach of a 5 m USB cable.

Model	Image	Part number	Slot Count	Onboard Trigger	Synchronization Enabled	Operating Temperature Range
cDAQ-9181		781496-01	1	No	No	0 °C to 55 °C
cDAQ-9185		785064-01	4	Yes	Yes	-40 °C to 70 °C
cDAQ-9189		785065-01	8			

This chassis is part of a CompactDAQ Measurement Bundle – **Learn More

Popular C Series Measurement Modules - Quick Selection Guide

This section lists some of the most popular C Series measurement modules by category so you can quickly match your needs to the module.

Temperature (RTD) Sensor Measurement C Series Modules

Test System Need	Module Specifications	Module	Front Connection Options
Start here. General purpose	8-Ch, 400 S/s, 0 Ω – 400 Ω, PT100	NI-9216	RJ50, D- Sub

Temperature (Thermocouple) Sensor Measurement C Series Modules

Test System Need	Module Specifications	Module	Front Connection Options
Start here. General purpose	16-ch	NI-9213*	Spring Terminal
More accuracy (0.37 ºC benchmark)	More accurate version of NI-9213	NI-9214	Spring Terminal
Ch-ch Isolation or TC minijack connectors	8-channel, ch-ch iso, mini-TC jacks	NI-9212	TC minijacks, screw terminals

Sound and Vibration Sensor Measurement C Series Modules

Test System Need	Module Specifications	Module	Front Connection Options
Start here.	4-ch, 51.2 kS/s/ch, ±5 V	NI-9234*	BNC
2x Faster Sample Rate. 30 V range	3-ch, 102.4 kS/s/ch, ±30 V	NI-9232	Screw Terminal, BNC
More channels/module	8-ch, 51.2 kS/s/ch, ±5 V	NI-9231*	10-32 Coaxial Jack
Lower Cost	12.8 kS/s/ch version of NI-9232	NI-9230	Screw Terminal, BNC

Bridge, Strain, Load, Pressure, Torque Sensor Measurement C Series Modules

Test System Need	Module Specifications	Module	Front Connection Options
Start here. General purpose. 4-ch,	4-ch, 50 kS/s/ch, 1/4, 1/2, Full-bridge	NI-9237*	RJ50, D-Sub
More than 2x 120 Ohm 1/4 bridge sensors	8-channels	NI-9235	Spring Terminal

*This module is part of a CompactDAQ Measurement Bundle

Multi-Sensor Measurement C Series Modules

Test System Need	Module Specifications	Module	Front Connection Options
Start here. General purpose.	4-ch, ch-ch iso, 100 S/s/ch, strain gages, RTD, Thermocouple, Load Cell, 1/2-, 1/4-, Full-bridge completion	NI-9219*	Spring Terminals

Current Input C Series Modules

Test System Need	Module Specifications	Module	Front Connection Options
Start here. General purpose	±20 mA, 8-ch, 200 kS/s	NI-9203	Spring Terminal, Screw Terminal
More ch/module, 24-bit, 50/60 Hz rejection	±20 mA, 16-ch, 500 S/s	NI-9208	Spring Terminal, D-Sub
Simultaneous sampling and LED indicators	±20 mA, 8-ch, 200 kS/s	NI-9253	Spring Terminal

Digital Input/Output C Series Modules

Test System Need	Module Specifications	Module	Front Connection Options
Industrial DIO	32-ch (16I/16O), 12 V/24 V industrial level	NI-9375	D-Sub, Spring Terminal
High Channel-count 24 V DO 3	32-ch, 12 V/24 V industrial level DO	NI-9476	D-Sub, Spring Terminal
TTL	8-ch, 5 V TTL	NI-9401*	D-Sub
High Channel-count TTL	32-ch, 5 V TTL	NI-9403	D-Sub
High Channel-count 24 V DI	32-ch, 12 V/24 V industrial level DI	NI-9425	D-Sub, Spring Terminal
Relay	250 VAC, 60 VDC, 4 relays	NI-9482	Screw Terminal, Spring Terminal
Industrial DI	8-ch, 12 V/24 V DI	NI-9421	D-Sub, Spring Terminal, Screw Terminal
Industrial DO	8-ch, 12 V/24 V DO	NI-9472	D-Sub, Spring Terminal, Screw Terminal

*This module is part of a CompactDAQ Measurement Bundle

Voltage Input Measurement C Series Modules

Test System Need	Module Specifications	Module	Front Connection Options
Start here. General purpose.	±10 V, 16-ch DI, 32-ch SE, 16-bit, 250 kS mux, gain settings	NI-9205*	D-Sub, Spring Terminal
Faster rate. Still high-density.	±10 V, 16-ch, 100 kS/s/ch simultaneous. No gain.	NI-9220*	D-Sub, Spring Terminal
24-bit resolution. 250 V ch-ch isolation.	±10 V, 4-ch, 50 kS/s/ch	NI-9239	Screw Terminal, BNC
60 V input range	±60 V version of NI-9239	NI-9229	Screw Terminal, BNC
Lowest cost simultaneous sampling	±10 V, 4-ch, 100 kS/s/ch	NI-9215*	Screw Terminal, Spring Terminal
Highest-speed simultaneous sampling	±10 V, 4-ch, 1 MS/s/ch	NI-9223	Screw Terminal, BNC
Medium speed. Medium cost.	±10 V, 4-ch, 500 kS/s/ch	NI-9222	Screw Terminal, BNC
Selectable filter, noise rejection	±10 V, 16-ch, 24-bit, 10 kS/s/ch	NI-9202	D-Sub, Spring Terminal
Digitizer functionality	±20 MS/s/ch digitizer. 14-bit. NI	NI-9775	BNC
Low cost, high-speed 12-bit	±10 V, 8-ch, 12-bit	NI-9201	D-Sub, Screw Terminal, Spring Terminal

Voltage Output C Series Modules

Test System Need	Module Specifications	Module	Front Connection Options
Start here. General purpose.	±10 V, 16-ch, 25 kS/s/ch	NI-9264	D-Sub, Spring Terminal
Lower cost and channels. Faster.	±10 V, 4-ch, 100 kS/s/ch	NI-9263	Spring Terminal, Screw Terminal
Ch-ch Isolated Output, 40 V range.	±10 V or ±40 V, 4-ch, 100 kS/s/ch	NI-9269*	Screw Terminal

*This module is part of a CompactDAQ Measurement Bundle

Improve Test Performance with NI Software for CompactDAQ

FlexLogger: No-code or out-of-the-box data logging

- **Configure** quick tests with alarms, test properties, and real-time data displays

- Simplify **sensor measurement** with sensor-specific templates

- **Log test results** to .tdms or .csv files

- **Add calculations** for simple math, filtering, Boolean logic, and more

- **Review data** with an included interactive TDMS file viewer

## LabVIEW: Control multiple test systems and more analysis

- **Acquire data** from NI hardware, 3rd party instruments, and many other protocols

- **Create interactive UIs** for monitoring and control.

- **Process** with standard math, probability, and statistical functions.

- **Integrate code** written in Python, C/C++, .NET, and MathWorks MATLAB® software.

- **Save data** to .csv, .tdms, or any custom-defined binary file

NI DAQmx Driver: Develop with Your Preferred Programming Language

- Python

- C, C+, C#

- .NET

- MATLAB® (Contact MathWorks® for the Data Acquisition Toolbox)

MATLAB is a registered trademark of The MathWorks, Inc.

CompactDAQ Chassis Options and Comparison
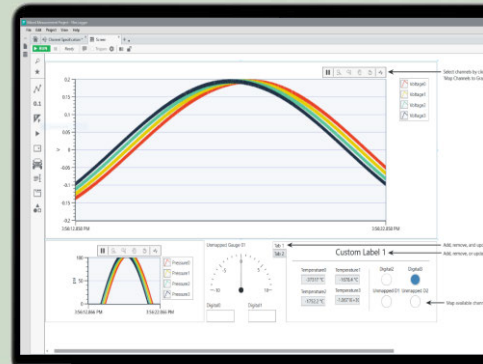
""FlexLogger makes it easier to troubleshoot and verify that the raw data from different sensors are correct before I start my test. This helps shorten test development by saving time typically wasted on redoing configurations."

- Andy Tarman,
Lab Test Engineer
CNH Industrial