NI 9426

32 DI, 30 V, Sourcing, 7 µs

- DSUB connectivity
- 60 VDC, CAT I, channel-to-earth isolation

The NI 9426 is a 32-channel sourcing digital input module for CompactDAQ and CompactRIO systems. The NI 9426 uses an industry-standard 37-pin DSUB connector and works with 24 V industrial logic levels and signals for direct connection to a wide array of industrial devices.

	Kit Contents	• NI 9426 • NI 9426 Getting Started Guide
	Accessories	**Front-Mount** • NI 9923 Screw-Terminal Block **Cable** • DSUB Cable, 1 m (778621-01)

C SERIES DIGITAL INPUT MODULE COMPARISON							
Product Name	Module Type	Signal Levels	Direction	Channels	Update Rate	Connectivity	Isolation
NI 9411	Digital Input	±5, 24 V	Sinking/Sourcing Diff/ SE Input	6	500 ns	15-Pin D-Sub	60 VDC Ch-Earth
NI 9421	Digital Input	12, 24 V	Sinking Input	8	100 µs	Screw Terminal, 25-Pin D-Sub	60 VDC Ch-Earth
NI 9422	Digital Input	24, 48, 60 V	Sinking/ Sourcing Input	8	250 µs	Screw Terminal	250 Vrms Ch-Ch
NI 9423	Digital Input	12, 24 V	Sinking Input	8	1 µs	Screw Terminal	60 VDC Ch-Earth
NI 9425	Digital Input	12, 24 V	Sinking Input	32	7 µs	37-Pin D-Sub	60 VDC Ch-Earth
NI 9426	Digital Input	24 V	Sourcing Input	32	7 µs	37-Pin D-Sub	60 VDC Ch-Earth
NI 9435	Digital Input	250 VDC/ VAC	Sinking/ Sourcing Input	4	3 ms	Screw Terminal	250 Vrms Ch-Earth
NI 9436	Digital Input	250 VDC/ VAC	Sinking/ Sourcing Input	8	10 ms	Screw Terminal	250 Vrms Ch-Ch
NI 9437	Digital Input	24 V to 250 V	Sinking Input	8	1 µs	Screw Terminal	300 Vrms Ch-Earth

NI C Series Overview

NI provides more than 100 C Series modules for measurement, control, and communication applications. C Series modules can connect to any sensor or bus and allow for high-accuracy measurements that meet the demands of advanced data acquisition and control applications.

- Measurement-specific signal conditioning that connects to an array of sensors and signals
- Isolation options such as bank-to-bank, channel-to-channel, and channel-to-earth ground
- -40 °C to 70 °C temperature range to meet a variety of application and environmental needs
- Hot-swappable

The majority of C Series modules are supported in both CompactRIO and CompactDAQ platforms and you can move modules from one platform to the other with no modification.

CompactRIO

CompactRIO combines an open-embedded architecture with small size, extreme ruggedness, and C Series modules in a platform powered by the NI LabVIEW reconfigurable I/O (RIO) architecture. Each system contains an FPGA for custom timing, triggering, and processing with a wide array of available modular I/O to meet any embedded application requirement.

CompactDAQ

CompactDAQ is a portable, rugged data acquisition platform that integrates connectivity, data acquisition, and signal conditioning into modular I/O for directly interfacing to any sensor or signal. Using CompactDAQ with LabVIEW, you can easily customize how you acquire, analyze, visualize, and manage your measurement data.


Software

### LabVIEW Professional Development System for Windows

- Use advanced software tools for large project development
- Generate code automatically using DAQ Assistant and Instrument I/O Assistant
- Use advanced measurement analysis and digital signal processing
- Take advantage of open connectivity with DLLs, ActiveX, and .NET objects
- Build DLLs, executables, and MSI installers

NI LabVIEW FPGA Module
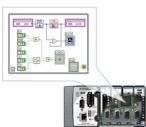
- Design FPGA applications for NI RIO hardware
- Program with the same graphical environment used for desktop and real-time applications
- Execute control algorithms with loop rates up to 300 MHz
- Implement custom timing and triggering logic, digital protocols, and DSP algorithms
- Incorporate existing HDL code and third-party IP including Xilinx IP generator functions
- Purchase as part of the LabVIEW Embedded Control and Monitoring Suite

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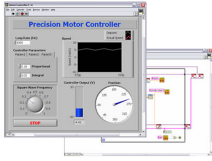
- Design deterministic real-time applications with LabVIEW graphical programming
- Download to dedicated NI or third-party hardware for reliable execution and a wide selection of I/O
- Take advantage of built-in PID control, signal processing, and analysis functions
- Automatically take advantage of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

Circuitry
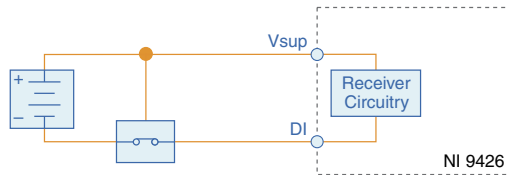
The NI 9426 has sourcing inputs. Sourcing inputs source current from Vsup to the sinking device connected to the NI 9426.

Tip For more information about sourcing inputs, visit *ni.com/info* and enter the Info Code sinksource.

NI 9426 Specifications

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

Caution Do not operate the NI 9426 in a manner not specified in this document. Product misuse can result in a hazard. You can compromise the safety protection built into the product if the product is damaged in any way. If the product is damaged, return it to NI for repair.

Input Characterstics

Number of channels	32 digital input channels
Input type	Sourcing

Digital logic levels

OFF state		
	Input voltage[1]	$\geq$ (Vsup - 5 V)
	Input current	$\leq$150 µA from DI pin
ON state		
	Input voltage[1]	$\leq$ (Vsup - 10 V)
	Input current	$\geq$330 µA from DI pin
Hysteresis		
	Input voltage	1.9 V minimum
	Input current	65 µA minimum

Input impedance	30 kΩ ±5%

I/O protection (Vsup-to-channel)

	Input voltage	30 V maximum
	Reverse-biased voltage	-30 V maximum

Hold time[2]	0 s minimum
Setup time[3]	1 µs minimum
Update/transfer time[4]	7 µs maximum
MTBF	955,723 hours at 25 °C; Bellcore Issue 2, Method 1, Case 3, Limited Part Stress Method

Power Requirements

Power consumption from chassis

	Active mode	615 mW maximum
	Sleep mode[5]	5 mW maximum

Thermal dissipation (at 70 °C)

	Active mode	1.35 W maximum
	Sleep mode	1.16 W maximum

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[1] Vsup is the external power supply voltage.

[2] *Hold time* is the amount of time input signals must be stable after initiating a read from the module.

[3] *Setup time* is the amount of time input signals must be stable before reading from the module.

[4] The update/transfer time is valid when the module is used in a CompactRIO system. When used in other systems, driver software and system latencies impact this time.

[5] The external power supply may power the module during sleep mode.

Physical Characteristics

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

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

Weight	147 g (5.2 oz)

Safety Voltages

Connect only voltages that are within the following limits:

Vsup-to-channel	30 VDC maximum
Isolation	
Channel-to-channel	None
Channel-to-earth ground	
Continuous	60 VDC, Measurement Category I
Withstand	1,000 Vrms, verified by a 5 s dielectric withstand test

Measurement Category I is for measurements performed on circuits not directly connected to the electrical distribution system referred to as *MAINS* voltage. MAINS is a hazardous live electrical supply system that powers equipment. This category is for measurements of voltages from specially protected secondary circuits. Such voltage measurements include signal levels, special equipment, limited-energy parts of equipment, circuits powered by regulated low-voltage sources, and electronics.

> ⚠ **Caution** Do not connect the NI 9426 to signals or use for measurements within Measurement Categories II, III, or IV.

> 📝 **Note** Measurement Categories CAT I and CAT O are equivalent. These test and measurement circuits are not intended for direct connection to the MAINS building installations of Measurement Categories CAT II, CAT III, or CAT IV.

Hazardous Locations

U.S. (UL)	Class I, Division 2, Groups A, B, C, D, T4; Class I, Zone 2, AEx nA IIC T4
Canada (C-UL)	Class I, Division 2, Groups A, B, C, D, T4; Class I, Zone 2, Ex nA IIC T4
Europe (ATEX) and International (IECEx)	Ex nA IIC T4 Gc

Safety and Hazardous Locations Standards

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

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA 61010-1
- EN 60079-0:2012, EN 60079-15:2010
- IEC 60079-0: Ed 6, IEC 60079-15; Ed 4
- UL 60079-0; Ed 5, UL 60079-15; Ed 3
- CSA 60079-0:2011, CSA 60079-15:2012

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

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for sensitive electrical equipment for measurement, control, and laboratory use:

- EN 61326 EMC requirements; Industrial Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

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

CE Compliance ϵ

This product meets the essential requirements of applicable European Directives, as follows:

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)
- 94/9/EC; Potentially Explosive Atmospheres (ATEX)

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 model 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.

Operating vibration	
Random (IEC 60068-2-64)	5 g_{rms}, 10 Hz to 500 Hz
Sinusoidal (IEC 60068-2-6)	5 g, 10 Hz 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

Refer to the manual for the chassis you are using for more information about meeting these specifications.

Operating temperature (IEC 60068-2-1, IEC 60068-2-2)	-40 °C to 70 °C
Storage temperature (IEC 60068-2-1, IEC 60068-2-2)	-40 °C to 85 °C
Ingress protection	IP40
Operating humidity (IEC 60068-2-78)	10% RH to 90% RH, noncondensing
Storage humidity (IEC 60068-2-78)	5% RH to 95% RH, noncondensing
Pollution Degree	2
Maximum altitude	2,000 m

Indoor use only.

Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the *Minimize Our Environmental Impact* 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 the product life cycle, all NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit *ni.com/environment/weee*.

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`.）