ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

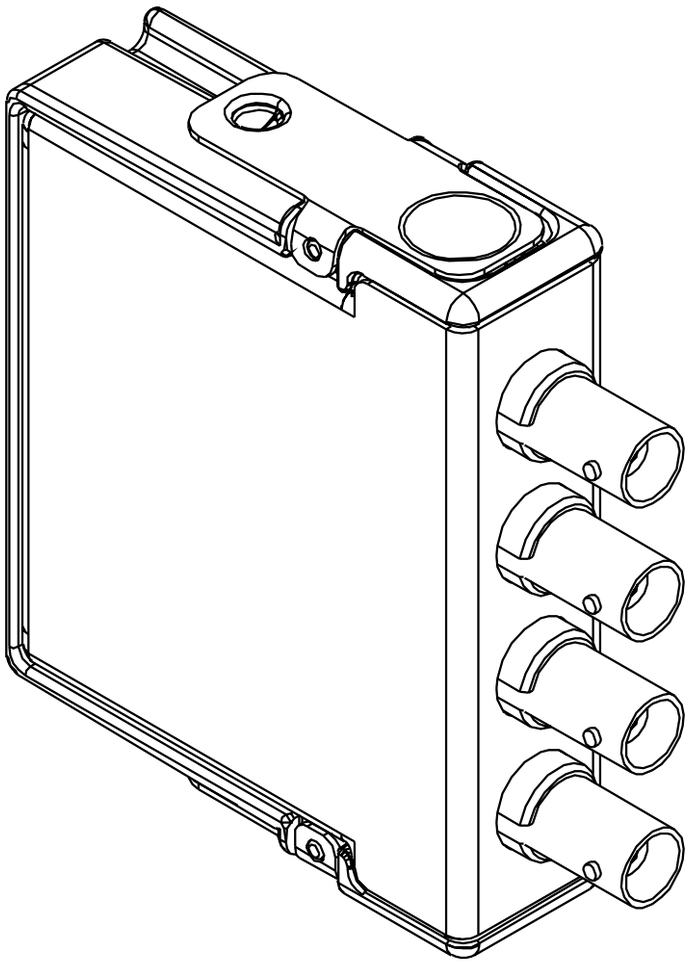
All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *National Instruments NI 9402* at our website: ***Click HERE***

GETTING STARTED GUIDE

NI 9402

4 DIO, LVTTL, Bidirectional, 55 ns



NATIONAL INSTRUMENTS™

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

This document explains how to connect to the NI 9402.



Note Before you begin, complete the software and hardware installation procedures in your chassis documentation.



Note The guidelines in this document are specific to the NI 9402. The other components in the system might not meet the same safety ratings. Refer to the documentation for each component in the system to determine the safety and EMC ratings for the entire system.

Safety Guidelines

Operate the NI 9402 only as described in this document.



Caution Do not operate the NI 9402 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.

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

Safety Voltages

Connect only voltages that are within the following limits:

Channel-to-earth ground	±30 V maximum
Isolation	
Channel-to-channel	None
Channel-to-earth ground	None

Safety Guidelines for Hazardous Locations

The NI 9402 is suitable for use in Class I, Division 2, Groups A, B, C, D, T4 hazardous locations; Class I, Zone 2, AEx nA IIC T4 and Ex nA IIC T4 hazardous locations; and nonhazardous locations only. Follow these guidelines if you are installing the NI 9402 in a potentially explosive environment. Not following these guidelines may result in serious injury or death.



Caution Do not disconnect I/O-side wires or connectors unless power has been switched off or the area is known to be nonhazardous.

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

Caution Do not remove modules unless power has been switched off or the area is known to be nonhazardous.

Caution Substitution of components may impair suitability for Class I, Division 2.

Caution For Division 2 and Zone 2 applications, install the system in an enclosure rated to at least IP54 as defined by IEC/EN 60079-15.

Caution For Division 2 and Zone 2 applications, connected signals must be within the following limits.

Capacitance	0.2 µF maximum

Special Conditions for Hazardous Locations Use in Europe and Internationally

The NI 9402 has been evaluated as Ex nA IIC T4 Gc equipment under DEMKO Certificate No. 07 ATEX 0626664X and is IECEx UL 14.0089X certified. Each NI 9402 is marked Ⓔx II 3G and is suitable for use in Zone 2 hazardous locations, in ambient temperatures of -40 °C ≤ Ta ≤ 70 °C. If you are using the NI 9402 in Gas Group IIC hazardous locations, you must use the device in

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

an NI chassis that has been evaluated as Ex nC IIC T4, Ex IIC T4, Ex nA IIC T4, or Ex nL IIC T4 equipment.



Caution You must make sure that transient disturbances do not exceed 140% of the rated voltage.



Caution The system shall only be used in an area of not more than Pollution Degree 2, as defined in IEC 60664-1.



Caution The system shall be mounted in an ATEX/IECEx-certified enclosure with a minimum ingress protection rating of at least IP54 as defined in IEC/EN 60079-15.



Caution The enclosure must have a door or cover accessible only by the use of a tool.

Electromagnetic Compatibility Guidelines

This product was tested and complies with the regulatory requirements and limits for electromagnetic compatibility (EMC) stated in the product specifications. These requirements and limits provide reasonable protection against harmful interference

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

when the product is operated in the intended operational electromagnetic environment.

This product is intended for use in industrial locations. However, harmful interference may occur in some installations, when the product is connected to a peripheral device or test object, or if the product is used in residential or commercial areas. To minimize interference with radio and television reception and prevent unacceptable performance degradation, install and use this product in strict accordance with the instructions in the product documentation.

Furthermore, any changes or modifications to the product not expressly approved by National Instruments could void your authority to operate it under your local regulatory rules.

Special Conditions for Marine Applications

Some products are Lloyd's Register (LR) Type Approved for marine (shipboard) applications. To verify Lloyd's Register certification for a product, visit *ni.com/certification* and search for the LR certificate, or look for the Lloyd's Register mark on the product.

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

Caution In order to meet the EMC requirements for marine applications, install the product in a shielded enclosure with shielded and/or filtered power and input/output ports. In addition, take precautions when designing, selecting, and installing measurement probes and cables to ensure that the desired EMC performance is attained.

Preparing the Environment

Ensure that the environment in which you are using the NI 9402 meets the following specifications.

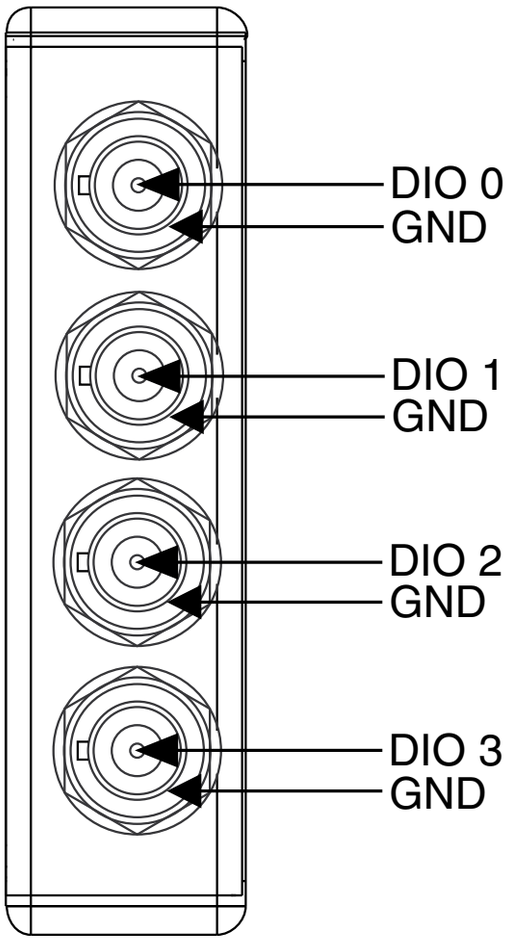
Operating temperature (IEC 60068-2-1, IEC 60068-2-2)	-40 °C to 70 °C
Operating humidity (IEC 60068-2-78)	10% RH to 90% RH, noncondensing
Pollution Degree	2
Maximum altitude	2,000 m

Indoor use only.

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

Note Refer to the device datasheet on *ni.com/manuals* for complete specifications.

NI 9402 Pinout



hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

Table 1. Signal Descriptions

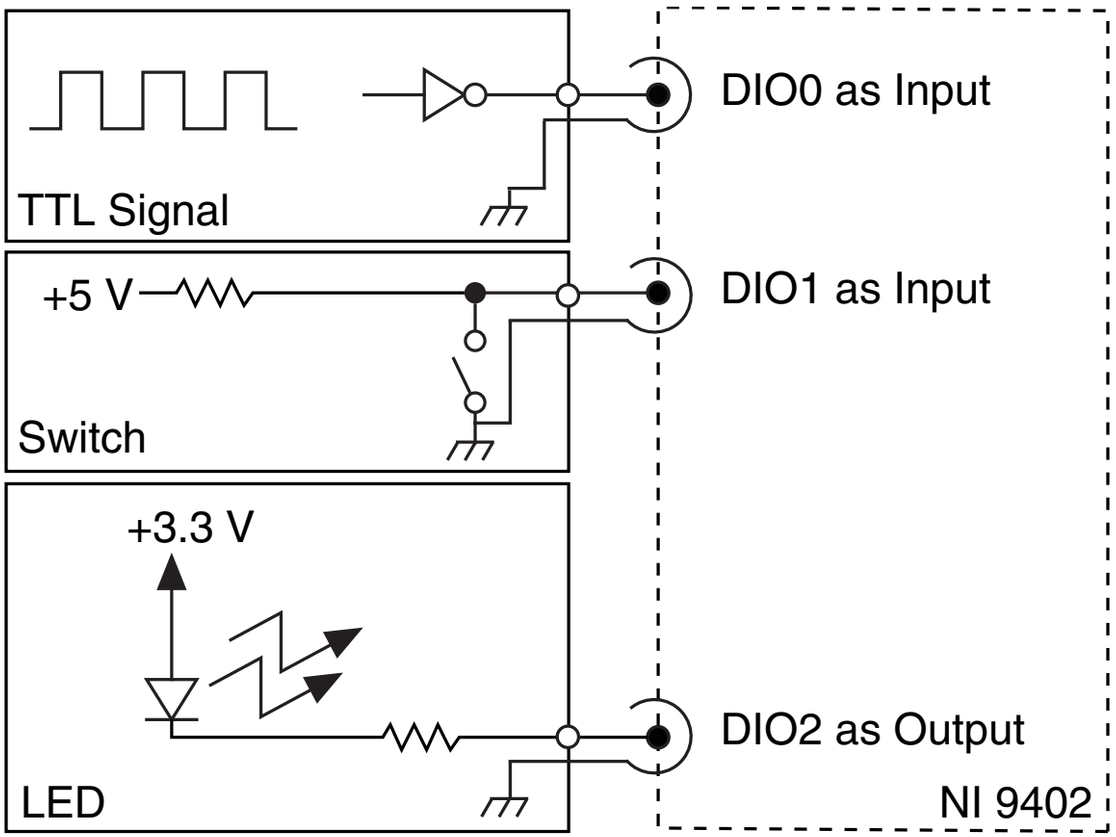
Signal	Description
DIO	Digital input/output signal connection
GND	Ground connection

Connecting Digital Devices to the NI 9402

You can connect digital devices to the NI 9402.

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

Figure 1. Connecting Digital Devices to the NI 9402



Each channel has a DIO pin to which you can connect a digital input or output device through a 50 Ω BNC cable. You can configure each DIO channel of the NI 9402 in software for input or output. Changing the direction on any channel will not affect the direction on the other channels. Refer to the software help for information about configuring channel direction.

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

I/O Protection

The NI 9402 provides I/O protection for each channel.

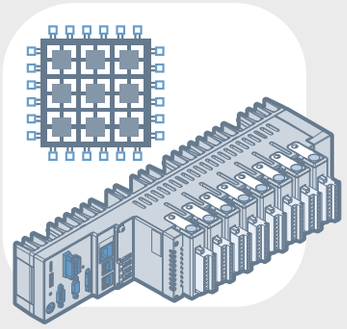


Note Refer to the device datasheet on *ni.com/manuals* for more information about I/O protection.

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

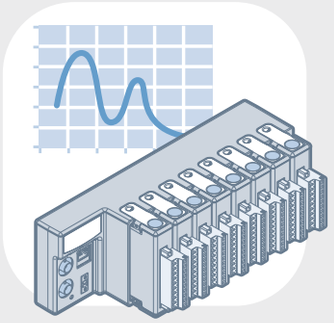
Where to Go Next

CompactRIO



- *NI 9402 Datasheet*
- *NI-RIO Help*
- *LabVIEW FPGA Help*

NI CompactDAQ



- *NI 9402 Datasheet*
- *NI-DAQmx Help*
- *LabVIEW Help*

RELATED INFORMATION

C Series Documentation & Resources
ni.com/info ⇨ cseriesdoc

Services
ni.com/services

Located at *ni.com/manuals*

Installs with the software

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

Worldwide Support and Services

The NI website is your complete resource for technical support. At *ni.com/support*, you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

Visit *ni.com/services* for NI Factory Installation Services, repairs, extended warranty, and other services.

Visit *ni.com/register* to register your NI product. Product registration facilitates technical support and ensures that you receive important information updates from NI.

A Declaration of Conformity (DoC) is our claim of compliance with the Council of the European Communities using the manufacturer's declaration of conformity. This system affords the user protection for electromagnetic compatibility (EMC) and product safety. You can obtain the DoC for your product by visiting *ni.com/certification*. If your product supports calibration, you can obtain the calibration certificate for your product at *ni.com/calibration*.

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

NI corporate headquarters is located at
11500 North Mopac Expressway, Austin, Texas, 78759-3504. NI also has offices located around the world. For telephone support in the United States, create your service request at *ni.com/support* or dial 1 866 ASK MYNI (275 6964). For telephone support outside the United States, visit the *Worldwide Offices* section of *ni.com/niglobal* to access the branch office websites, which provide up-to-date contact information, support phone numbers, email addresses, and current events.

Refer to the *NI Trademarks and Logo Guidelines* at `ni.com/trademarks` for information on NI trademarks. Other product and company names mentioned herein are trademarks or trade names of their respective companies. For patents covering NI products/technology, refer to the appropriate location: **Help**»**Patents** in your software, the `patents.txt` file on your media, or the *National Instruments Patent Notice* at `ni.com/patents`. You can find information about end-user license agreements (EULAs) and third-party legal notices in the readme file for your NI product. Refer to the *Export Compliance Information* at `ni.com/legal/export-compliance` for the NI global trade compliance policy and how to obtain relevant HTS codes, ECCNs, and other import/export data. NI MAKES NO EXPRESS OR IMPLIED WARRANTIES AS TO THE ACCURACY OF THE INFORMATION CONTAINED HEREIN AND SHALL NOT BE LIABLE FOR ANY ERRORS. U.S. Government Customers: The data contained in this manual was developed at private expense and is subject to the applicable limited rights and restricted data rights as set forth in FAR 52.227-14, DFAR 252.227-7014, and DFAR 252.227-7015.

© 2009—2016 National Instruments. All rights reserved.

374614B-01 Jan16

hnology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP