NI-9411 Getting Started

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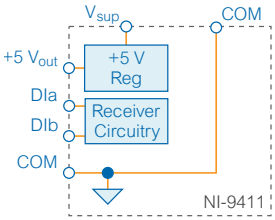
NI-9411 Block Diagram

The NI-9411 channels share a common ground isolated from other modules in the system.

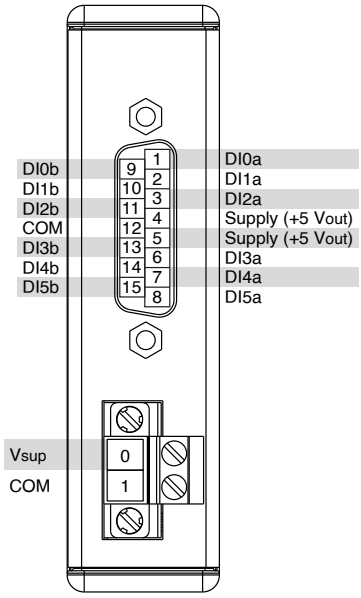
Figure 1. NI-9411 Input Circuitry



NI-9411 Pinout

The NI-9411 provides connections for 6 digital input channels.

Figure 2. NI-9411 Pinout



Note You must use 2-wire ferrules to create a secure connection when connecting more than one wire to a single terminal on the NI-9411 screw-

terminal connector.

NI-9411 Signals

Table 1. DSUB Connector Signal Descriptions

Signal	Description
COM	Common reference connection to isolated ground
DIa and DIb	Digital input signal connections
Supply (+5 V_{out})	5 V power output connection for external devices

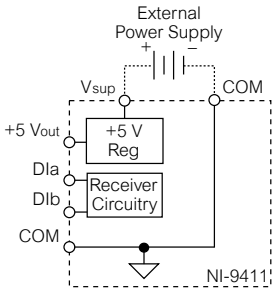
Table 2. Screw-Terminal Connector Signal Descriptions

Signal	Description
COM	Common reference connection to isolated ground
V_{sup}	Voltage supply connection

Connecting an External Power Supply to the NI-9411

You can connect an external power supply to the NI-9411. The external power supply provides power for external devices through the NI-9411 +5 Vout terminal. Connecting an external power supply to the NI-9411 is optional, depending on your application.

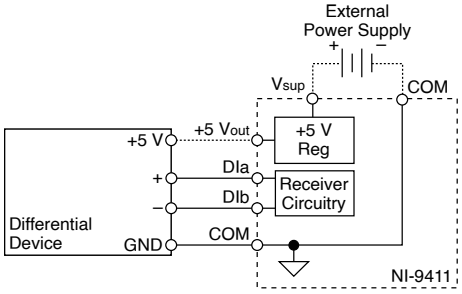
Figure 3. Connecting an External Power Supply



Connecting a Differential Device to the NI-9411

You can connect differential devices to the NI-9411.

Figure 4. Connecting a Differential Device to the NI-9411



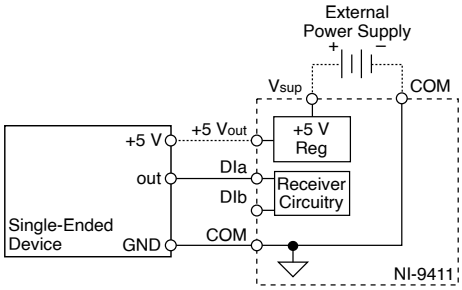
The NI-9411 compares the difference between DIa and DIb to the digital logic levels to determine if the signal is in the high range or low range.

Tip Refer to the device datasheet at ni.com/manuals for the digital logic levels.

Connecting a Single-Ended Device to the NI-9411

You can connect single-ended (TTL) devices to the NI-9411.

Figure 5. Connecting a Single-Ended Device to the NI-9411



The NI-9411 compares the difference between DIa and COM to the digital logic levels to determine if the signal is in the high range or low range.

Tip Refer to the device datasheet at ni.com/manuals for the digital logic levels.

Connecting an Encoder to the NI-9411

An encoder has phase A, phase B, and index signals. Use the phase A signals to measure rotational speed. Use the phase B signals to measure direction. Use the index

signals to measure the number of rotations. You can connect differential and single-ended encoders to the NI-9411.

Figure 6. Connecting a Differential Encoder to the NI-9411

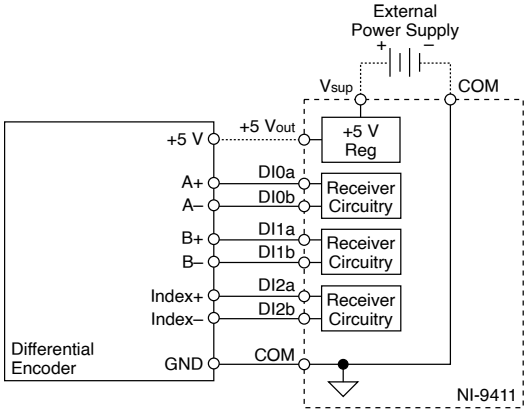
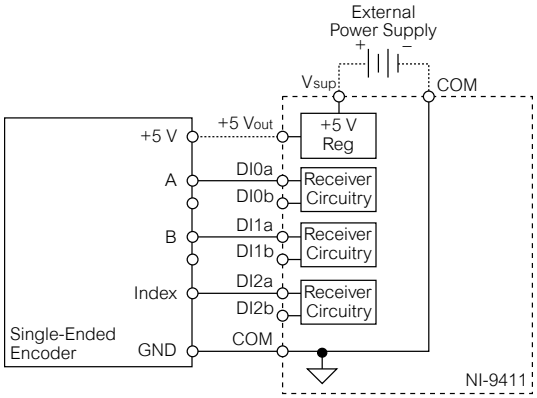


Figure 7. Connecting a Single-Ended Encoder to the NI-9411



High-Vibration Application Connections

If your application is subject to high vibration, NI recommends that you follow these guidelines to protect connections to the NI-9411:

- Use ferrules to terminate wires to the detachable connector.
- Use the NI-9948 connector backshell kit.

Conformal Coating

The NI-9411 is available with conformal coating for additional protection in corrosive and condensing environments, including environments with molds and dust.

In addition to the environmental specifications listed in the ***NI-9411 Safety,***

Environmental, and Regulatory Information, the NI-9411 with conformal coating meets the following specification for the device temperature range. To meet this specification, you must follow the appropriate setup requirements for condensing environments. Refer to ***Conformal Coating and NI RIO Products*** for more information about conformal coating and the setup requirements for condensing environments.

Operating humidity (IEC 60068-2-30 Test Db)	80 to 100% RH, condensing

Related information:

- Conformal Coating and NI RIO Products