NI USB-9211/9211A

4-Channel, 24-Bit Thermocouple Input Devices

> このドキュメントの日本語版については、`ni.com/manuals` を参照してください。(For a Japanese language version, go to `ni.com/manuals`.)

This user guide describes how to use the National Instruments USB-9211/9211A devices and lists the specifications.

Introduction

The NI USB-9211/9211A data acquisition device provides a USB interface for four channels of 24-bit thermocouple inputs with integrated signal conditioning.

The NI USB-9211 consists of two components: an NI 9211 module and an NI USB-9161 carrier, as shown in Figure 1. The NI USB-9211A consists of two components: an NI 9211 module and an NI USB-9162 carrier, as shown in Figure 1.
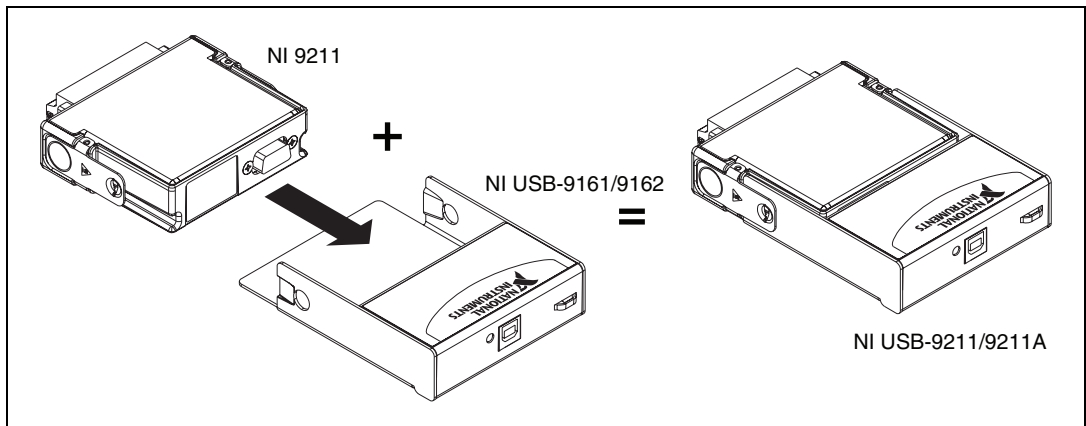

NI 9211

NI USB-9161/9162

NI USB-9211/9211A

Figure 1. NI USB-9211/9211A Components

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Dimensions

Figure 2 shows the NI USB-9211/9211A device dimensions.

140.23 mm
(5.521 in.)

120.68 mm
(4.751 in.)

137.82 mm
(5.426 in.)

118.26 mm
(4.656 in.)

88.12 mm
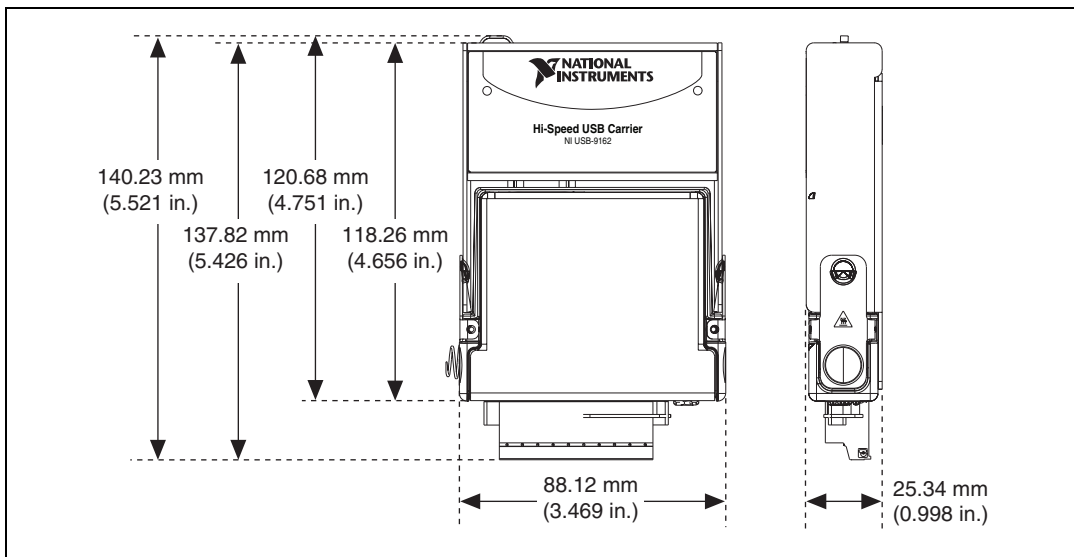(3.469 in.)

25.34 mm
(0.998 in.)

Figure 2. NI USB-9211/9211A Device in Millimeters (Inches)

Safety Guidelines

Operate the NI USB-9211/9211A only as described in these operating instructions.

Note Although the NI 9211 module may have more stringent certification standards than the NI USB-9211/9211A, when used with the NI USB-9161/9162 carrier, the combined system may be limited. Refer to the *Specifications* section for more details.

Hot Surface This icon denotes that the component may be hot. Touching this component may result in bodily injury.

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

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

Caution The NI USB-9211/9211A is *not* certified for use in hazardous locations.

Safety Guidelines for Hazardous Voltages

If *hazardous voltages* are connected to the module, take the following precautions. A hazardous voltage is a voltage greater than 42.4 V_{pk} or 60 VDC to earth ground.

⚠ **Caution** Ensure that hazardous voltage wiring is performed only by qualified personnel adhering to local electrical standards.

⚠ **Caution** Do *not* mix hazardous voltage circuits and human-accessible circuits on the same module.

⚠ **Caution** Make sure that devices and circuits connected to the module are properly insulated from human contact.

⚠ **Caution** When module terminals are live with hazardous voltages, make sure that the terminals are *not* accessible by using the high voltage screw terminal enclosure. Refer to the *Assembling the High Voltage Screw Terminal Backshell* section for more information.

Related Documentation

Each application software package and driver includes information about writing applications for taking measurements and controlling measurement devices. The following references to documents assume you have NI-DAQmx 8.7 or later, NI-DAQmx Base 3.*x*, and where applicable, version 7.1 or later of the NI application software.

NI-DAQmx for Windows

The *DAQ Getting Started Guide* describes how to install your NI-DAQmx for Windows software, how to install your NI-DAQmx-supported DAQ device, and how to confirm that your device is operating properly. Select **Start»All Programs»National Instruments»NI-DAQ»DAQ Getting Started Guide**.

The *NI-DAQ Readme* lists which devices are supported by this version of NI-DAQ. Select **Start»All Programs»National Instruments»NI-DAQ» NI-DAQ Readme**.

The *NI-DAQmx Help* contains general information about measurement concepts, key NI-DAQmx concepts, and common applications that are applicable to all programming environments. Select **Start» All Programs»National Instruments»NI-DAQ»NI-DAQmx Help**.

📝 **Note** For information about non-Windows operating system support, refer to ni.com/info and enter BaseGSGML.

LabVIEW

If you are a new user, use the *Getting Started with LabVIEW* manual to familiarize yourself with the LabVIEW graphical programming environment and the basic LabVIEW features you use to build data acquisition and instrument control applications. Open the *Getting Started with LabVIEW* manual by selecting **Start»All Programs»National Instruments»LabVIEW»LabVIEW Manuals** or by navigating to the labview\manuals directory and opening LV_Getting_Started.pdf.

Use the *LabVIEW Help*, available by selecting **Help»Search the LabVIEW Help** in LabVIEW, to access information about LabVIEW programming concepts, step-by-step instructions for using LabVIEW, and reference information about LabVIEW VIs, functions, palettes, menus, and tools. Refer to the following locations on the **Contents** tab of the *LabVIEW Help* for information about NI-DAQmx:

- **Getting Started»Getting Started with DAQ**—Includes overview information and a tutorial to learn how to take an NI-DAQmx measurement in LabVIEW using the DAQ Assistant.

- **VI and Function Reference»Measurement I/O VIs and Functions**—Describes the LabVIEW NI-DAQmx VIs and properties.

- **Taking Measurements**—Contains the conceptual and how-to information you need to acquire and analyze measurement data in LabVIEW, including common measurements, measurement fundamentals, NI-DAQmx key concepts, and device considerations.

LabWindows/CVI

The **Data Acquisition** book of the *LabWindows/CVI Help* contains measurement concepts for NI-DAQmx. This book also contains *Taking an NI-DAQmx Measurement in LabWindows/CVI*, which includes step-by-step instructions about creating a measurement task using the DAQ Assistant. In LabWindows™/CVI™, select **Help»Contents**, then select **Using LabWindows/CVI»Data Acquisition**.

The **NI-DAQmx Library** book of the *LabWindows/CVI Help* contains API overviews and function reference for NI-DAQmx. Select **Library Reference»NI-DAQmx Library** in the *LabWindows/CVI Help*.

Measurement Studio

If you program your NI-DAQmx-supported device in Measurement Studio using Visual C++, Visual C#, or Visual Basic .NET, you can interactively create channels and tasks by launching the DAQ Assistant from MAX or from within Visual Studio .NET. You can generate the configuration code

based on your task or channel in Measurement Studio. Refer to the *DAQ Assistant Help* for additional information about generating code. You also can create channels and tasks, and write your own applications in your ADE using the NI-DAQmx API.

For help with NI-DAQmx methods and properties, refer to the NI-DAQmx .NET Class Library or the NI-DAQmx Visual C++ Class Library included in the *NI Measurement Studio Help*. For general help with programming in Measurement Studio, refer to the *NI Measurement Studio Help*, which is fully integrated with the Microsoft Visual Studio .NET help. To view this help file in Visual Studio. NET, select **Measurement Studio» NI Measurement Studio Help**.

To create an application in Visual C++, Visual C#, or Visual Basic .NET, follow these general steps:

1. In Visual Studio .NET, select **File»New»Project** to launch the New Project dialog box.

2. Find the Measurement Studio folder for the language you want to create a program in.

3. Choose a project type. You add DAQ tasks as a part of this step.

ANSI C without NI Application Software

The *NI-DAQmx Help* contains API overviews and general information about measurement concepts. Select **Start»All Programs»National Instruments»NI-DAQ»NI-DAQmx Help**.

The *NI-DAQmx C Reference Help* describes the NI-DAQmx Library functions, which you can use with National Instruments data acquisition devices to develop instrumentation, acquisition, and control applications. Select **Start»All Programs»National Instruments»NI-DAQ» NI-DAQmx C Reference Help**.

.NET Languages without NI Application Software

With the Microsoft .NET Framework version 1.1 or later, you can use NI-DAQmx to create applications using Visual C# and Visual Basic .NET without Measurement Studio. You need Microsoft Visual Studio .NET 2003 or Microsoft Visual Studio 2005 for the API documentation to be installed.

The installed documentation contains the NI-DAQmx API overview, measurement tasks and concepts, and function reference. This help is fully integrated into the Visual Studio .NET documentation. To view the NI-DAQmx .NET documentation, go to **Start»Programs»National Instruments»NI-DAQ»NI-DAQmx .NET Reference Help**. Expand **NI Measurement Studio Help»NI Measurement Studio .NET Class**

Library»Reference to view the function reference. Expand **NI Measurement Studio Help»NI Measurement Studio .NET Class Library»Using the Measurement Studio .NET Class Libraries** to view conceptual topics for using NI-DAQmx with Visual C# and Visual Basic .NET.

To get to the same help topics from within Visual Studio, go to **Help» Contents**. Select **Measurement Studio** from the **Filtered By** drop-down list and follow the previous instructions.

Device Documentation and Specifications

NI-DAQmx includes the Device Document Browser, which contains online documentation for supported DAQ and SCXI devices, such as documents describing device pinouts, features, and operation. You can find, view, and/or print the documents for each device using the Device Document Browser at any time by inserting the CD. After installing the Device Document Browser, device documents are accessible from **Start» All Programs»National Instruments»NI-DAQ»Browse Device Documentation**.

Note You can download these documents at `ni.com/manuals`.

NI-DAQmx Base (Linux/Mac OS X/LabVIEW PDA 8.*x*)

The *NI-DAQmx Base Getting Started Guide* describes how to install your NI-DAQmx Base software, your NI-DAQmx Base-supported DAQ device, and how to confirm that your device is operating properly. In Windows, select **Start»All Programs»National Instruments»NI-DAQmx Base» Documentation»Getting Started Guide**.

Getting Started with NI-DAQmx Base for Linux and Mac Users describes how to install your NI-DAQmx Base software, your NI-DAQmx Base-supported DAQ device, and how to confirm that your device is operating properly on your Mac/Linux machine.

The *NI-DAQmx Base Readme* lists which devices are supported by this version of NI-DAQmx Base. In Windows, select **Start»All Programs» National Instruments»NI-DAQmx Base»DAQmx Base Readme**.

The *NI-DAQmx Base VI Reference Help* contains VI reference and general information about measurement concepts. In LabVIEW, select **Help» NI-DAQmx Base VI Reference Help**.

The *NI-DAQmx Base C Reference Help* contains C reference and general information about measurement concepts. In Windows, select **Start» All Programs»National Instruments»NI-DAQmx**

Base»Documentation»
C Function Reference Help.

Note All NI-DAQmx Base documentation for Linux is installed at `/usr/local/natinst/nidaqmxbase/documentation`.

Note All NI-DAQmx Base documentation for Mac OS X is installed at `/Applications/National Instruments/NI-DAQmx Base/documentation`.

Training Courses

If you need more help getting started developing an application with NI products, NI offers training courses. To enroll in a course or obtain a detailed course outline, refer to `ni.com/training`.

Technical Support on the Web

For additional support, refer to `ni.com/support` or `zone.ni.com`.

Installing the Software

Software support for the NI USB-9211/9211A for Windows Vista/XP/2000 is provided by NI-DAQmx or NI-DAQmx Base depending on the software you are using. Software support for your hardware depends on the carrier being used. Refer to Table 1 for a list of software support.

Table 1. Devices and Corresponding Components

Device	Carrier	Software Support
NI USB-9211	NI USB-9161	NI-DAQmx Base 2.2 and previous
NI USB-9211A	NI USB-9162	NI-DAQmx or NI-DAQmx Base 3.0 and later

The *DAQ Getting Started Guide*, which you can download at `ni.com/manuals`, offers NI-DAQmx users step-by-step instructions for installing software and hardware, configuring channels and tasks, and getting started developing an application.

Note For information about non-Windows operating system support, refer to `ni.com/info` and enter `BaseGSGML`.

Installing Other Software

If you are using other software, refer to the installation instructions that accompany your software.

✎ **Note** If your device uses NI-DAQmx Base, refer to ni.com to download the software.

Example Programs

The NI-DAQmx CD contains example programs that you can use to get started programming with the NI USB-9211A. Refer to the *NI-DAQmx for USB Devices Getting Started Guide* that shipped with your device, and is also accessible from **Start»All Programs»National Instruments» NI-DAQ**, for more information.

The NI-DAQmx Base software ships with example programs you can use to get started programming with the NI USB-9211/9211A. Refer to the *NI-DAQmx Base Getting Started Guide* that shipped with your device, and is also accessible from **Start»All Programs»National Instruments» NI-DAQmx Base»Documentation**, for more information.

Installing the NI USB-9211/9211A Device

Before installing the device, you must install the software you plan to use with the device. Refer to the *Installing the Software* section of this guide and the documentation included with the software for more information.

Installing the NI 9211 in the NI USB-9161/9162 Carrier

The NI 9211 module and the NI USB-9161/9162 carrier are packaged separately. Refer to Figure 3, while completing the following assembly steps:

1. Make sure that no signals are connected to the NI 9211 module and the USB cable is not connected to the device.

2. Remove the protective cover from the 15-pin D-SUB connector.

3. Align the I/O module with the carrier, as shown in Figure 3.
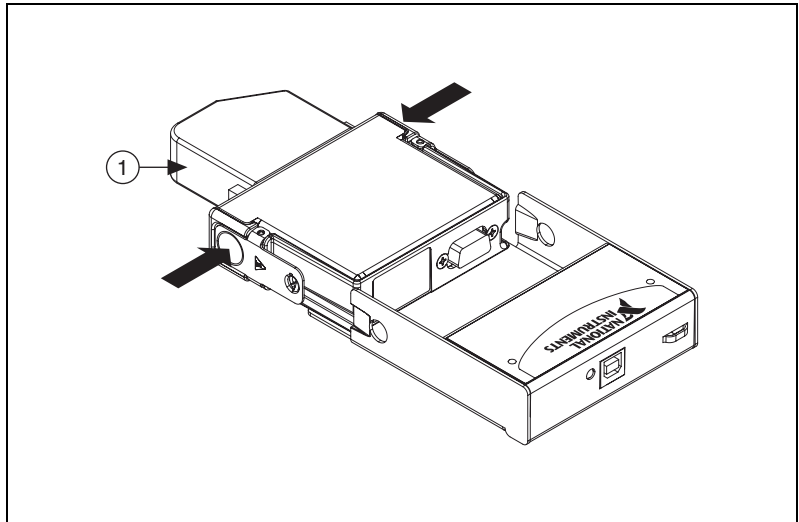
| 1 | High Voltage Screw Terminal Backshell |

Figure 3. Module Installation

4. Squeeze the latches and insert the NI 9211 module into the carrier.
5. Press firmly on the connector side of the NI 9211 module until the latches lock the module into place, as shown in Figure 4.
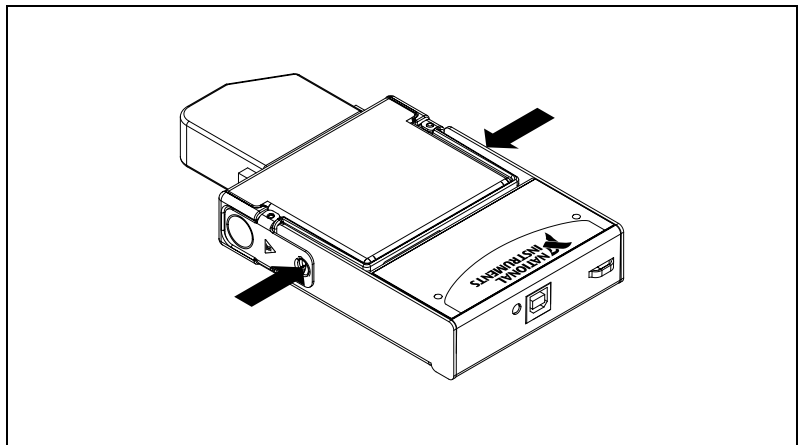
Figure 4. Locking Module into Place

Mounting the NI USB-9211/9211A to a Panel

Threaded inserts are located in the NI USB-9211/9211A for mounting it to a panel. Refer to Figure 5 for dimensions.
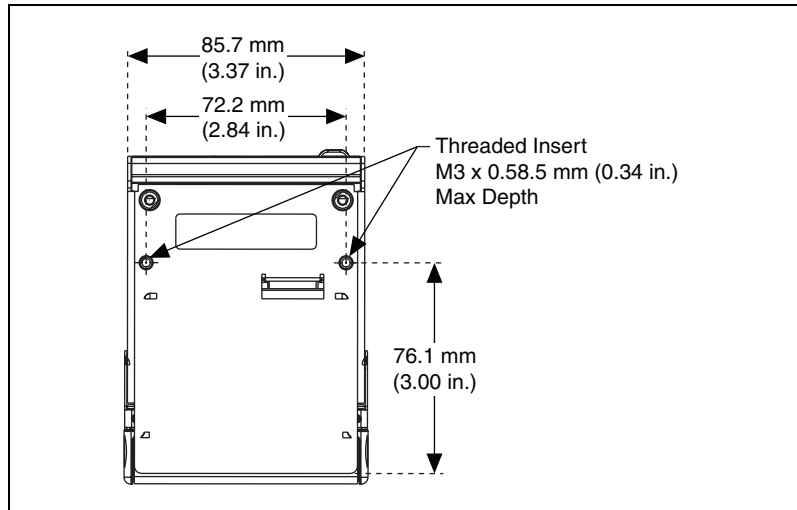
Figure 5. Module Dimensions in Millimeters (Inches)

Connecting the NI USB-9211/9211A to a Computer

Plug one end of the USB cable into the NI USB-9211/9211A and the other end into an available USB port on the computer.

LED Indicator

The NI USB-9211/9211A device has a green LED next to the USB connector. The LED indicator indicates device status, as listed in Table 2. When the device is connected to a USB port, the LED blinks steadily to indicate that the device is initialized and is receiving power from the connection.

If the LED is not blinking, it may mean that the device is not initialized or the computer is in standby mode. In order for the device to be recognized, the device must be connected to a computer that has NI-DAQmx/NI-DAQmx Base installed on it. If your device is not blinking, make sure your computer has the latest version of NI-DAQmx/NI-DAQmx Base installed on it, and the computer is not in standby mode.

Table 2. LED State/Device Status

| LED State	Device Status
Not lit	Device not connected or in suspend.
On, not blinking	Device connected, but no module installed.
Single-blink	Operating normally.
Double-blink	Operating normally.
Quadruple-blink	Device error. Refer to ni.com/support.

Wiring the NI USB-9211/9211A Device

⚠️ **Caution** A high voltage screw terminal backshell must be installed when using hazardous voltages (>42.4 V_{pk}, 60 VDC).

📝 **Note** The NI 9932 10-terminal, detachable, high voltage, screw-terminal backshell accessory works with the NI USB-9211/9211A and is available from ni.com. For more information about installing the backshell, refer to the *Assembling the High Voltage Screw Terminal Backshell* section.

The screw terminal provides connections for four thermocouple input channels. Each channel has a terminal to which you can connect the positive lead of the thermocouple, TC+, and a terminal to which you can connect the negative lead of the thermocouple, TC–. The NI USB-9211/9211A also has a common terminal, COM, that is internally connected to the isolated ground reference of the module.

If you are unsure which of the thermocouple leads is positive and which is negative, check the thermocouple documentation or the thermocouple wire spool. If you are using shielded wiring, connect one end of the shield to the COM terminal.
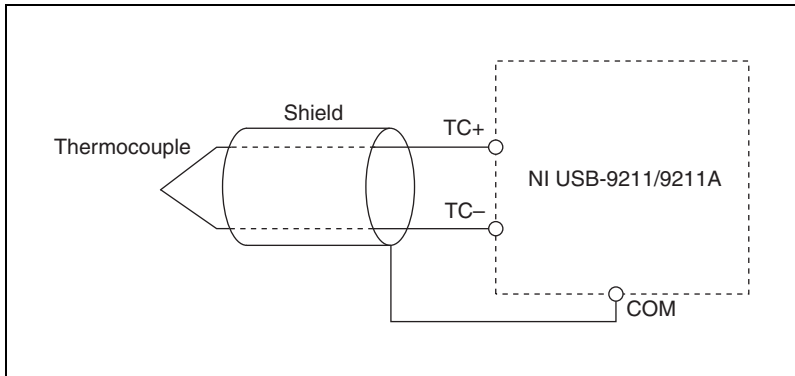
Figure 6. Connecting a Thermocouple Input Signal to the NI USB-9211/9211A

Refer to Table 3 for the terminal assignments for each channel.

Table 3. Terminal Assignments

| Module	Terminal	Signal
	0	TC0+
	1	TC0–
	2	TC1+
	3	TC1–
	4	TC2+
	5	TC2–
	6	TC3+
	7	TC3–
	8	No connection
	9	Common (COM)

Assembling the High Voltage Screw Terminal Backshell

The NI 9932 high voltage screw terminal backshell must be installed when using hazardous voltages (>42.4 V_{pk}, 60 VDC). Refer to Figure 7 while completing the following steps to assemble the backshell:

1. Connect the leads to the screw terminal and secure with the strain relief.

2. Finish by snapping the backshell around the connector.

| 1 | Strain Relief |
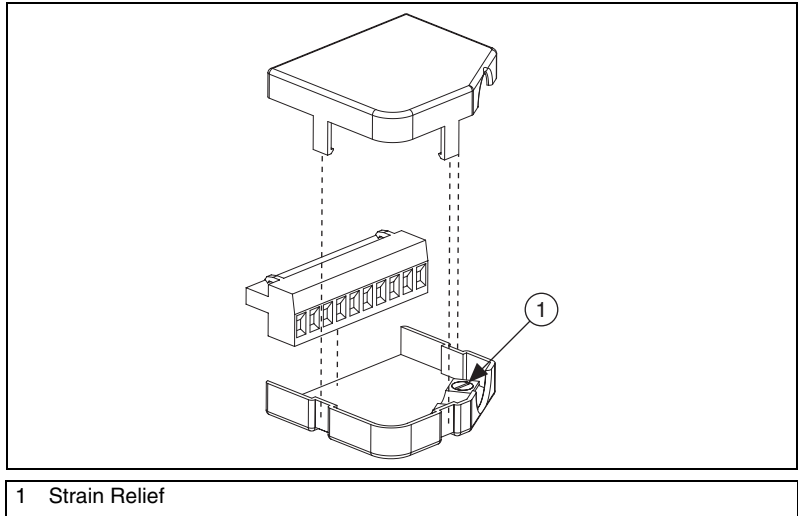
**Figure 7.** High Voltage Screw Terminal Backshell
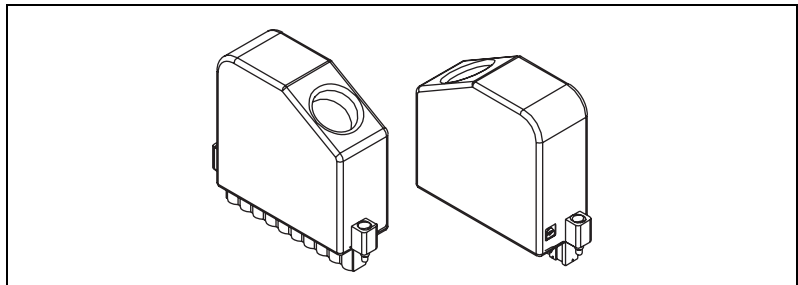
Figure 8. Assembled High Voltage Screw Terminal Backshell

NI USB-9211/9211A Circuitry

The NI USB-9211/9211A channels share a common ground that is isolated from the chassis and the host computer. Each channel has an impedance between the TC+ and COM terminals and between the TC– and COM terminals. Each channel is filtered and then sampled by a 24-bit analog-to-digital converter (ADC). There is a current source between the TC+ and TC– terminals. If an open thermocouple is connected to the channel, the current source forces a full-scale voltage across the terminals.

Effects of Source Impedance on Voltage Measurement Accuracy

The resistors shown in Figure 9 produce an input impedance at the terminals of the NI USB-9211/9211A.
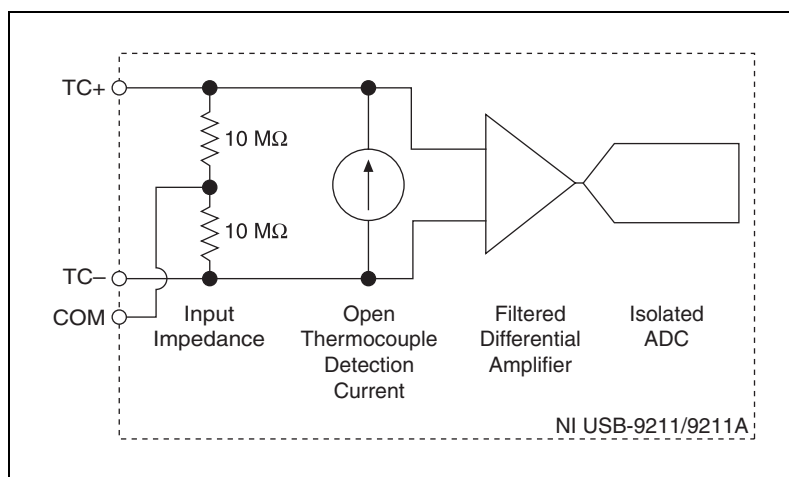
Figure 9. Input Circuitry for One Channel

If thermocouples are connected to the NI USB-9211/9211A, the gain and offset errors resulting from the source impedance of the thermocouples are negligible for most applications. Other voltage sources with a higher source impedance can introduce more significant errors. For more information about errors resulting from source impedance, refer to the *Specifications* section.

Determining Temperature Measurement Accuracy and Minimizing Errors

Temperature measurement errors depend in part on the thermocouple type, the temperature being measured, the accuracy of the thermocouple, and the cold-junction temperature.

Using the Autozero Channel

The NI USB-9211/9211A has an internal autozero channel for measuring the offset error. If the ambient temperature of the NI USB-9211/9211A is less than 15 °C or more than 35 °C, use this channel to read the offset error. The NI USB-9211 always has this channel enabled. Use NI-DAQmx to configure the behavior of the autozero channel for the NI USB-9211A. Refer to the *LabVIEW Help* for 8.0 or later, accessible from **Start»All Programs»National Instruments»LabVIEW 8.5»LabVIEW Help**, and search for Auto Zero Mode for more information.

Measurement Accuracy for the Different Types of Thermocouples

Figures 10, 11, 12, 13, and 14 show the typical and maximum errors for the different thermocouple types when used with the NI USB-9211/9211A over the full temperature range. The figures also show the maximum error for the thermocouple types with the NI USB-9211/9211A at room temperature, 15 to 35 °C. The figures account for gain errors, offset errors, differential and integral nonlinearity, quantization errors, noise errors, and isothermal errors. The figures do *not* account for the accuracy of the thermocouple itself.

Temperature gradients across the NI USB-9211/9211A terminals affect the cold-junction temperature accuracy. Refer to the *Cold-Junction Temperature Measurement Accuracy* section for more information about temperature gradients.
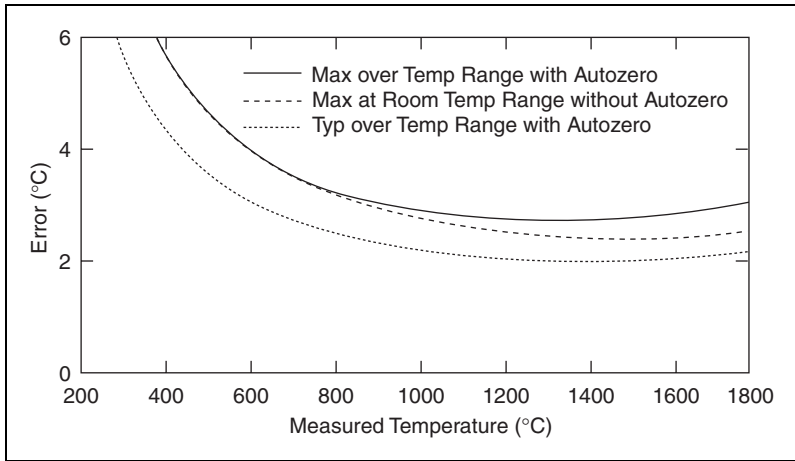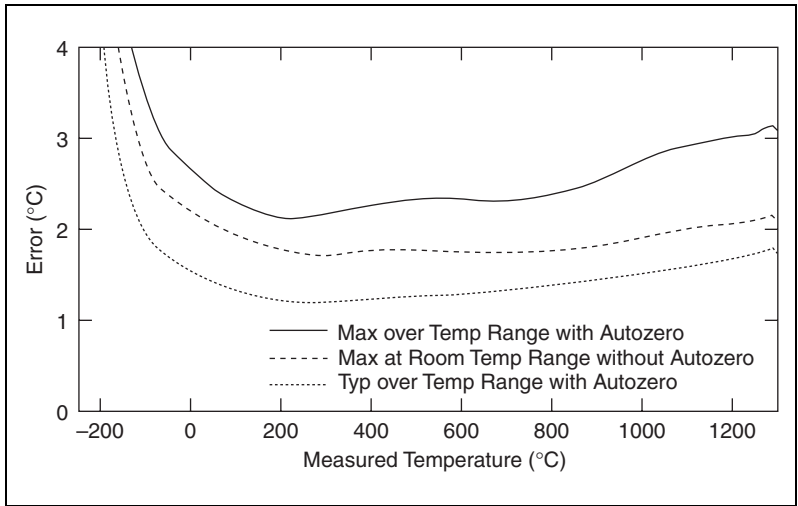
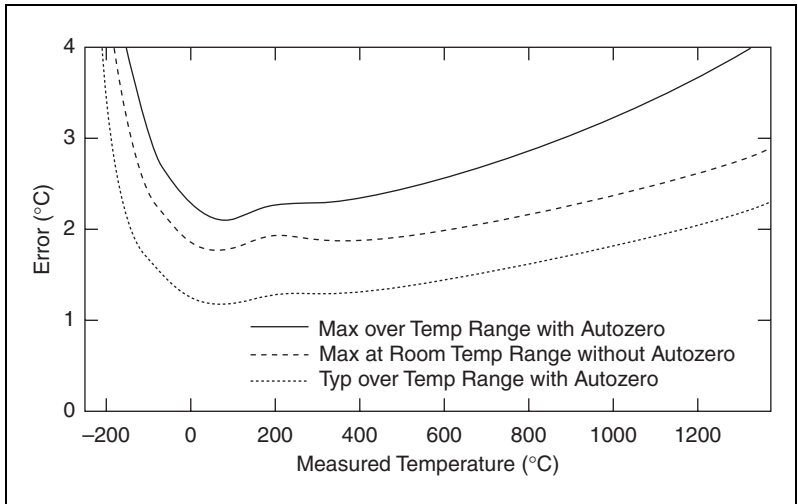**Figure 10.** Type B Errors
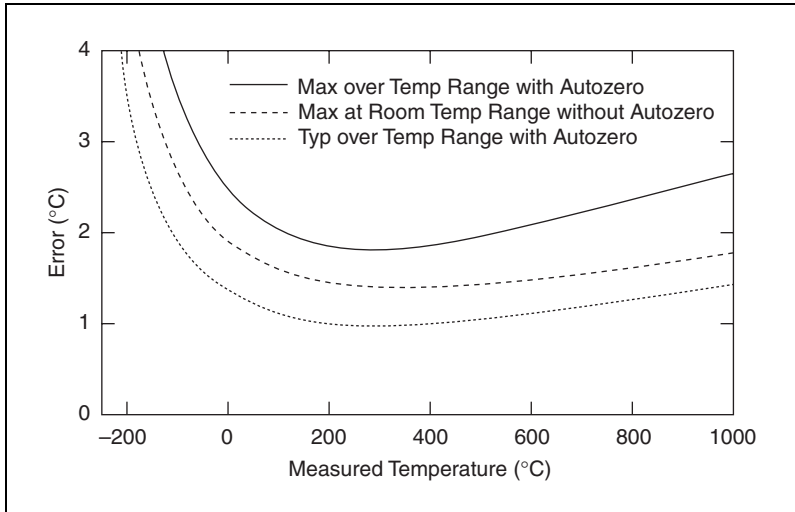
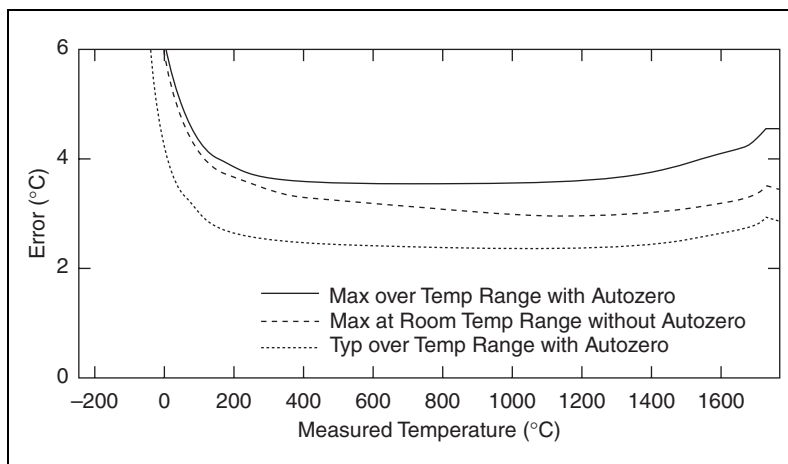**Figure 11.** Type E and T Errors

Figure 12. Type J and N Errors

Figure 13. Type K Errors

Figure 14. Type R and S Errors

Cold-Junction Temperature Measurement Accuracy

Heat from other nearby heat sources can cause errors in thermocouple measurements by heating up the terminals so that they are at a different temperature than the cold-junction compensation sensor used to measure the cold junction. The thermal gradient generated across the terminals can cause the terminals of different channels to be at different temperatures, so the resulting measurement creates errors not only in absolute accuracy but also in the relative accuracy between channels.

Minimizing Thermal Gradients

Thermocouple wire can be a significant source of thermal gradients if it conducts heat or cold directly to terminal junctions. To minimize these errors, follow these guidelines:

- Use small-gauge thermocouple wire. Smaller wire transfers less heat to or from the measuring junction.

- Run thermocouple wiring together near the screw-terminal connector to keep the wires at the same temperature.

- Avoid running thermocouple wires near hot or cold objects.

- If you connect any extension wires to thermocouple wires, use wires made of the same conductive material.

Specifications

The following specifications are typical at 25 °C, unless otherwise noted. All voltages are relative to COM unless otherwise noted.

Input Characteristics

Number of channels .... 4 thermocouple channels,
1 internal autozero channel,
1 internal cold-junction
compensation channel

ADC resolution .... 24 bits

Type of ADC... Delta-sigma

Input range .... ±80 mV (not software selectable)

Common-mode range

    Channel-to-COM .... ±1.5 V

    Common-to-earth ground .... ±250 V

Common-mode rejection ratio (0 to 60 Hz)

    Channel-to-common .... 95 dB

    Common-to-earth ground .... >170 dB

Temperature measurement ranges .... Works over temperature
ranges defined by NIST
(J, K, R, S, T, N, E, and
B thermocouple types)

Cold-junction compensation sensor accuracy

    0 to 60 °C .... 0.6 °C (1.1 °F) typ,
1.3 °C (2.3 °F) max

Conversion time .... 70 ms per channel;
420 ms total for all channels
including the autozero and
cold-junction channels

Max sampling rate (Hz)

Number of Channels in Scan List	Type of Measurement		
	Temperature with CJC and Autozero	Temperature with Autozero	RAW Analog Input
1	4	6	12
2	3	4	6
3	2.4	3	4
4	2	2.4	3
Note: NI-DAQmx Base always applies autozero.			

Input bandwidth (–3 dB)..........................15 Hz

Noise rejection...85 dB min at 50/60 Hz

Overvoltage protection ....±30 V between any input and common

Differential input impedance ....20 MΩ

Input current ....50 nA

Input noise ....1 μV_{rms}

Gain error..0.05% max at 25 °C,
0.06% typ (over temperature)
0.1% max (over temperature)

Offset error (with autozeroing)...............15 µV typ, 20 µV max

Gain error from source impedance ....0.05 ppm per Ω source impedance due to input impedance

Offset error from source impedance ....0.05 µV typ, 0.07 µV max per Ω source impedance due to input current

Power Requirements

Current consumption from USB.............500 mA, max

    Suspend mode..................................2.5 mA, max

Bus Interface

USB specification

    NI USB-9211 .... USB 2.0 Full-Speed

    NI USB-9211A .... USB 2.0 Hi-Speed

Physical Characteristics

Dimensions .... $14 \text{ cm} \times 8.6 \text{ cm} \times 2.5 \text{ cm}$
($5.51 \text{ in.} \times 3.37 \text{ in.} \times 0.99 \text{ in.}$)

Weight... Approx. 350 g (12.3 oz)

Screw-terminal wiring............................ 12 to 24 AWG wire with 10 mm
(0.39 in.) of insulation stripped
from the end

Torque for screw terminals .... 0.5–0.6 N · m (4.4–5.3 lb · in.)

Safety

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

Safety Voltages

Connect only voltages that are within these limits.

Channel-to-COM .... ±30 V max,
Measurement Category

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.

Isolation

    Channel-to-channel......................... No isolation between channels

    Channel-to-earth ground

        Withstand................................ $2,300 \text{ V}_{rms}$, 5 seconds max

        Continuous.............................. 250 V_{rms},
Measurement Category II

Measurement Category II is for measurements performed on circuits directly connected to the electrical distribution system. This category refers to local-level electrical distribution, such as that provided by a standard wall outlet (for example, 115 V for U.S. or 230 V for Europe).

Safety Standards

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

- IEC 61010-1, EN-61010-1
- UL 61010-1, CSA 61010-1

Note For UL and other safety certifications, refer to the product label or visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Hazardous Locations

The NI USB-9211/9211A is *not* certified for use in hazardous locations.

Environmental

The NI USB-9211/9211A device is intended for indoor use only.

Operating temperature
(IEC 60068-2-1 and IEC 60068-2-2)......0 to 60 °C

Storage temperature
(IEC 60068-2-1 and IEC 60068-2-2)......–40 to 85 °C

Operating humidity
(IEC 60068-2-56) ....10 to 90% RH, noncondensing

Storage humidity
(IEC 60068-2-56) ....5 to 95% RH, noncondensing

Maximum altitude...................................2,000 m (at 25 °C ambient temperature)

Pollution Degree (IEC 60664)................2

Electromagnetic Compatibility

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

- EN 61326 EMC requirements; Minimum 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 double-shielded cables.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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.

Environmental Management

National Instruments is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial not only to the environment but also to NI customers.

For additional environmental information, refer to the *NI and the Environment* 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 their life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit `ni.com/environment/weee.htm`.

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`.)

Calibration

You can obtain the calibration certificate for the NI USB-9211/9211A at ni.com/calibration.

Calibration interval ....1 year

Where to Go for Support

The National Instruments Web site 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.

National Instruments corporate headquarters is located at 11500 North Mopac Expressway, Austin, Texas, 78759-3504. National Instruments also has offices located around the world to help address your support needs. For telephone support in the United States, create your service request at ni.com/support and follow the calling instructions or dial 512 795 8248. For telephone support outside the United States, contact your local branch office:

Australia 1800 300 800, Austria 43 662 457990-0,
Belgium 32 (0) 2 757 0020, Brazil 55 11 3262 3599,
Canada 800 433 3488, China 86 21 5050 9800,
Czech Republic 420 224 235 774, Denmark 45 45 76 26 00,
Finland 358 (0) 9 725 72511, France 01 57 66 24 24,
Germany 49 89 7413130, India 91 80 41190000, Israel 972 3 6393737,
Italy 39 02 41309277, Japan 0120-527196, Korea 82 02 3451 3400,
Lebanon 961 (0) 1 33 28 28, Malaysia 1800 887710,
Mexico 01 800 010 0793, Netherlands 31 (0) 348 433 466,
New Zealand 0800 553 322, Norway 47 (0) 66 90 76 60,
Poland 48 22 3390150, Portugal 351 210 311 210, Russia 7 495 783 6851,
Singapore 1800 226 5886, Slovenia 386 3 425 42 00,
South Africa 27 0 11 805 8197, Spain 34 91 640 0085,
Sweden 46 (0) 8 587 895 00, Switzerland 41 56 2005151,
Taiwan 886 02 2377 2222, Thailand 662 278 6777,
Turkey 90 212 279 3031, United Kingdom 44 (0) 1635 523545