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SC Series – DAQ with Integrated Signal Conditioning

SC Series

- Tightly integrated measurement-specific signal conditioning on a single data acquisition device
- Direct sensor/signal connectivity
- 333 kS/s, 16-bit resolution
- Self-calibration for accuracy over time
- NI-PGIA custom instrumentation amplifier for accurate measurements
- Temperature drift protection circuitry
- PXI trigger bus to synchronize operations between two or more modules
- Digital triggering

Operating Systems

- Windows 2000/NT/XP
- LabVIEW Real-Time

Recommended Software

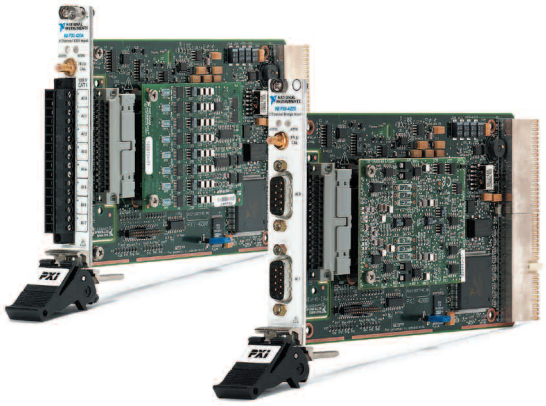
- LabVIEW
- LabWindows/CVI
- Measurement Studio

Other Compatible Software

- Visual Basic, C/C++, and C#

Measurement Services Software (included)

- NI-DAQmx driver software
- Measurement & Automation Explorer configuration utility



Product	Analog Inputs	Resolution (bits)	Aggregate Sampling Rate (kS/s)[1]	Input Range (V)	Isolation (V)	Simultaneous Sampling	Triggers	Filter Settings per Channel
PXI-4204	8 DI	16	200	±0.5 to ±100	–	✓	Digital (2)	2-pole Butterworth (6 Hz or 10 kHz)
PXI-4220	2 quarter, half, or full-bridge	16	200	±0.01 to ±10	–	✓	Digital (2)	4-pole Butterworth (10 Hz, 100 Hz, 1 kHz, 10 kHz, bypass)
PXI-4224	8 DI	16	200	0 to ±10	42, CAT I	–	Digital (2)	15 KHz

[1]All channels share one analog-to-digital converter.

Table 1. SC Series Product Selection Guide

Family	Bus	Analog Inputs	Resolution (bits)	Sampling Rate (S/s)	Input Range (V)	Simultaneous Sampling	Triggers	Filter Settings per Channel
NI 4472	PXI, PCI	8 IEPE[1]	24	102.4 k	±10	✓	Analog and digital	Tracking filter (.5465 fs)
NI 435x	PXI, PCI, USB	16 DI thermocouple, RTD, or resistance	24	60	±15	–	–	20 Hz bandwidth

[1]Integrated Electronic Piezoelectric Accelerometers and Microphones

Table 2. Other NI Data Acquisition Devices with Built-In Signal Conditioning

Overview

National Instruments SC Series data acquisition (DAQ) modules expand the measurement capability of PXI by integrating measurement-specific signal conditioning onto a 16-bit PXI data acquisition module. With this tight integration of signal conditioning and data acquisition functionality, the SC Series delivers high-performance sensor-specific measurements at a lower cost per channel than leading solutions, such as SCXI DAQ systems, for low-to-medium channel counts.

Features

SC Series modules feature an integrated architecture that combines the high-performance functionality of NI 16-bit DAQ devices with the accuracy improvements of signal conditioning. With this integrated architecture, SC Series PXI modules deliver higher-performance measurements, taking advantage of the many inherent benefits of the rugged PXI platform. In particular, with the PXI trigger bus, you can synchronize SC Series modules with one another and with other PXI measurement modules to provide tight integration between measurement types in a single data acquisition system. In addition, SC Series modules feature temperature-drift-protection circuitry that minimizes the effect of ambient temperature changes to ensure accuracy in all environments. SC Series modules also feature the NI-PGIA, an instrument-class amplifier that guarantees settling times at all gains, ensuring that you take advantage of the full 16-bit resolution of the amplifier. Each SC Series module also features an onboard precision voltage source for self-calibration, and digital triggering for precise acquisition control.

Related Products

For high-channel-count or portable applications requiring signal conditioning, please refer to **ni.com/sigcon**.

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Channel-to-Channel Isolated DAQ
16-Bit, 200 kS/s, 8 Isolated Analog Inputs

NI PXI-4224

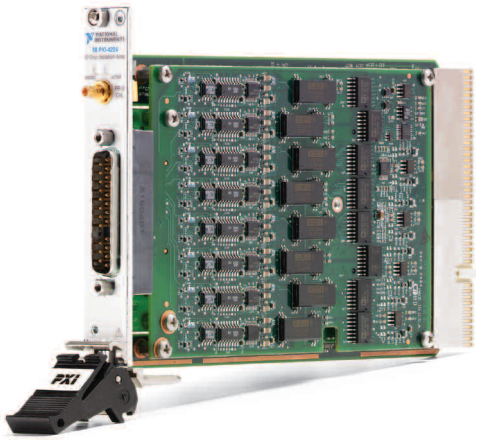
- 8 analog inputs at 333 kS/s, 16-bit resolution
- ±10 V input range
- 42 V CAT I channel-to-channel isolation
- 15 kHz bandwidth per channel
- Programmable gains (1 and 10) per channel
- Screw-terminal direct connectivity
- NI measurement services software that simplifies configuration and measurements

Operating Systems
- Windows 2000/NT/XP/Me/9x

Recommended Software
- LabVIEW
- LabWindows/CVI
- Measurement Studio for Visual Basic

Other Compatible Software
- Visual Basic
- C/C++

Measurement Services Software (included)
- NI-DAQmx driver software
- Measurement & Automation Explorer configuration utility



Product	Analog Inputs	Resolution (bits)	Aggregate Sampling Rate (kS/s)	Input Range (V)	Isolation (V)	Triggers	Filter Settings per Channel
PXI-4224	8 DI	16	200[1]	0 to ±10	42, CAT I	Digital (2)	15 kHz

[1]333 kS/s for a Single Channel

Table 1. SC Series Product Selection Guide

Overview and Applications

The National Instruments PXI-4224 module is the newest member of the SC Series of PXI data acquisition (DAQ) modules with built-in signal conditioning. The NI PXI-4224 provides channel-to-channel isolation to ensure accurate, safe measurements even in the presence of high common-mode voltages. You can use it in a broad variety of applications including:

- Isolated thermocouple measurements
- Multichannel data-logging applications
- Fuel cell and battery test applications

Features

The PXI-4224 is a full-featured measurement module with channel-to-channel isolation, ±10 V input range, and 16-bit accuracy, making it ideal for applications requiring highly accurate measurements with high common-mode voltages. In addition, channel-to-channel isolation prevents ground potential loops that may exist between your measured signal and data acquisition system, ensuring maximum measurement accuracy. The PXI-4224 provides 42 V, CAT I channel-to-channel isolation. The module delivers programmable gain settings per channel to ensure maximum measurement accuracy. In addition, the module is designed to work with LabVIEW 7 Express and NI-DAQmx. In LabVIEW 8.20, you can use DAQ Assistant to configure the PXI-4224 and acquire data through a menu-based window, eliminating the need to manually program the device.

For high-channel-count measurements requiring isolation, view NI signal conditioning hardware at ni.com/sigcon.

NI-DAQmx Measurement Services Software

NI-DAQmx controls every aspect of your DAQ system, from configuration to programming to low-level OS and device control. The new NI-DAQmx software includes:

- Automatic code generation from a configuration screen
- Analog, digital, and counter/timer test panels
- Error diagnostic pinpointing
- Real-world unit scaling
- Advanced calibration

Ordering Information

NI PXI-4224 779182-01
Includes NI-DAQmx driver software.

Terminal Block

NI TB-2725 779167-01

BUY NOW!

For complete product specifications, pricing, and accessory information, call (800) 813 3693 (U.S.) or go to **ni.com/sigcon**.

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Hardware Services

NI Factory Installation Services

NI Factory Installation Services (FIS) is the fastest and easiest way to use your PXI or PXI/SCXI combination systems right out of the box. Trained NI technicians install the software and hardware and configure the system to your specifications. NI extends the standard warranty by one year on hardware components (controllers, chassis, modules) purchased with FIS. To use FIS, simply configure your system online with **ni.com/pxiadvisor**.

Calibration Services

NI recognizes the need to maintain properly calibrated devices for high-accuracy measurements. We provide manual calibration procedures, services to recalibrate your products, and automated calibration software specifically designed for use by metrology laboratories. Visit **ni.com/calibration**.

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