PRODUCT FLYER

PXI Sound and Vibration

CONTENTS

Vertrieb durch AMC

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PXI Sound and Vibration Module

PXI-4461, PXI-4472B, PXIe-4463, PXIe-4464, PXIe-4480, PXIe-4492, PXIe-4497, PXIe-4499

- **Software:** Includes API support for LabVIEW and text-based languages, complete with shipping examples and detailed help files.

- Dynamic sensor measurements at 51.2 kS/s, 102.4 kS/s, 204.8 kS/s or 1.25 MS/s

- Built-in high pass filtering

- Per-channel, software-selectable AC input coupling

- Per-channel, software-selectable input gain settings

- Available with analog output channels for dynamic signal generation

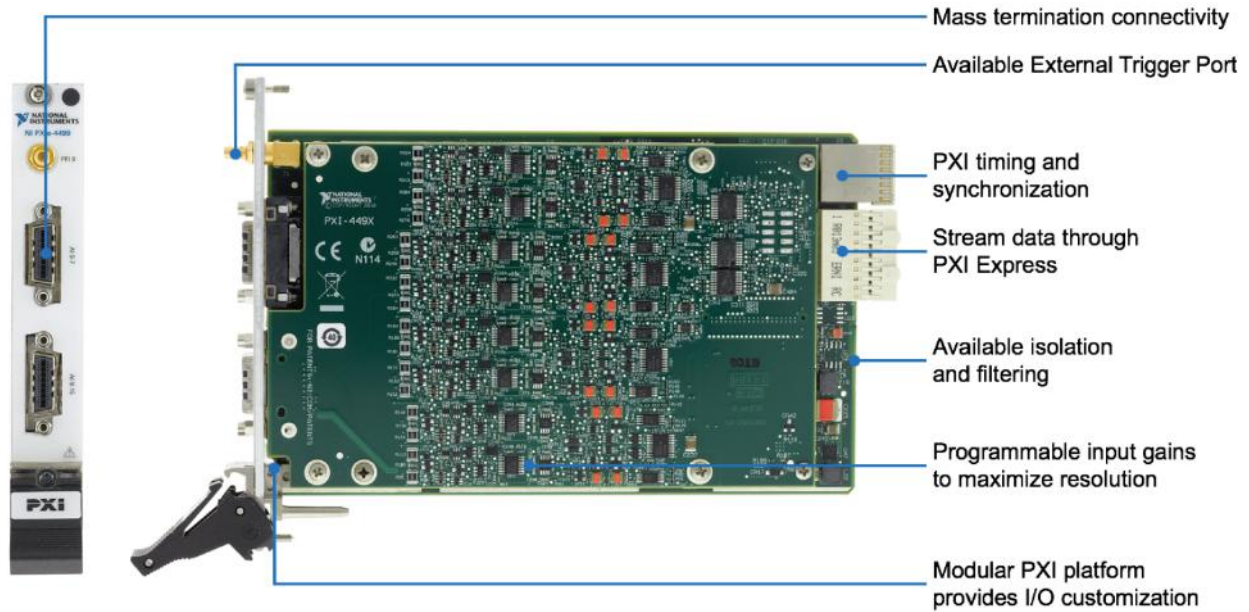- PXI and PXIe bus connectivity availability

Reliably Characterize Dynamic Signals

PXI Sound and Vibration Modules are designed specifically for applications like audio test and measurement, noise and vibration diagnostics, machine condition monitoring, automotive test, noise, vibration, and harshness (NVH) analysis, and laboratory research. They provide software-configurable AC/DC coupling, antialiasing filters, and IEPE conditioning to ensure precision measurements with microphones, accelerometers, and other transducers with large dynamic ranges.

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Table 2. NI PCI(e) multifunction I/O devices add high quality I/O to a desktop PC.

	Bus	Input Channels	Max Input Rate	Input Coupling	Output Channels	High Pass Cutoff Freq.	No. Gain Settings	I/O Connector Type
PXI-4451	PXI	2	204.8 kHz	AC/DC	2	3.4 Hz	6	BNC, SMB
PXI-4462	PXI	4	204.8 kHz	AC/DC	0	3.4 Hz	6	BNC, SMB
PXI-4472	PXI	8	102.4 kHz	AC/DC	0	3.4 Hz	1	SMB
PXI-4472B	PXI	8	102.4 kHz	AC/DC	0	0.5 Hz	1	SMB
PXIe-4463	PXIe	0	51.2 kHz	-	2	3.4 Hz	3	Mini-XLR, SMB
PXIe-4463	PXIe	0	51.2 kHz	-	2	3.4 Hz	3	BNC, SMB
PXIe-4464	PXIe	4	204.8 kHz	AC/DC	0	0.72 Hz	6	BNC
PXIe-4464	PXIe	4	204.8 kHz	AC/DC	0	0.72 Hz	6	Mini-XLR
PXIe-4480	PXIe	6	1.25 MS/s	AC/DC	0	0.5 Hz	4	InfiniBand (IB)
PXIe-4492	PXIe	8	204.8 kHz	AC/DC	0	0.5 Hz	2	InfiniBand (IB)
PXIe-4497	PXIe	16	204.8 kHz	AC/DC	0	0.5 Hz	2	InfiniBand (IB)
PXIe-4499	PXIe	16	204.8 kHz	AC/DC	0	0.5 Hz	4	InfiniBand (IB)

Detailed View of PXI Express Sound and Vibration Module

Mass termination connectivity

Available External Trigger Port

PXI timing and synchronization

Stream data through PXI Express

Available isolation and filtering

Programmable input gains to maximize resolution

Modular PXI platform provides I/O customization

Key Features

Performance Where is Counts

Sensor-Specific Signal Conditioning
IEPE constant current conditioning can be enabled with many modules on a per-channel basis. This allows for measurements with dynamic signal sensors like microphones and accelerometers that require excitation, without the need for an external signal conditioner. As a result, the measurement system is physically smaller and is capable of greater accuracy and precision.

High Spurious Free Dynamic Range
Simultaneously sample multiple channels at up to 113 dB of spurious free dynamic range to ensure reliable characterization of frequencies. National Instruments' dynamic acquisition devices are carefully designed to minimized spurious frequencies that can be caused by the electrical components of the device itself.
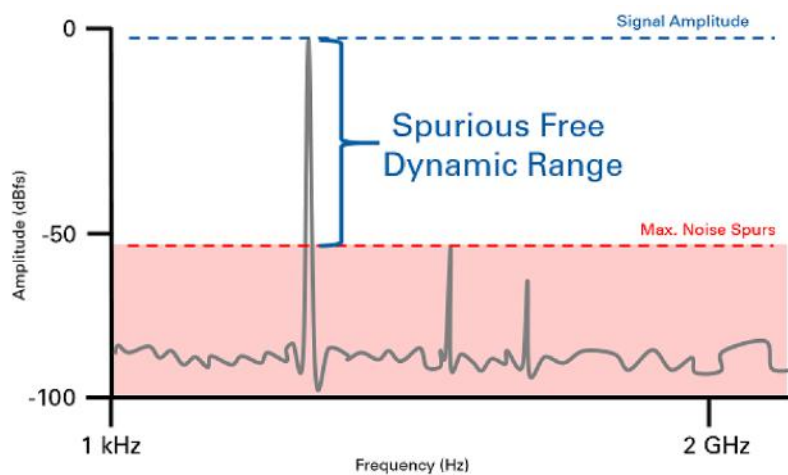

High Bandwidth and Exceptional Flatness
Modules are available for a variety of bandwidth requirements, and provide reliable and consistent performance across the measureable spectrum. This helps to ensure accurate representation of a signal's amplitude at all incoming frequencies, even at the upper end of the device's bandwidth as the signal approaches the -3dB roll-off point.
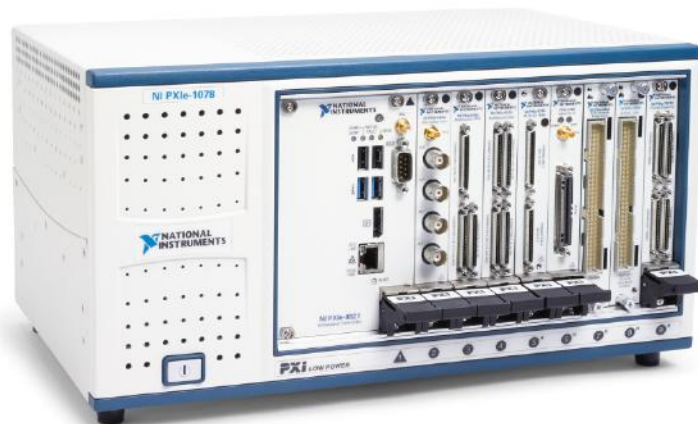
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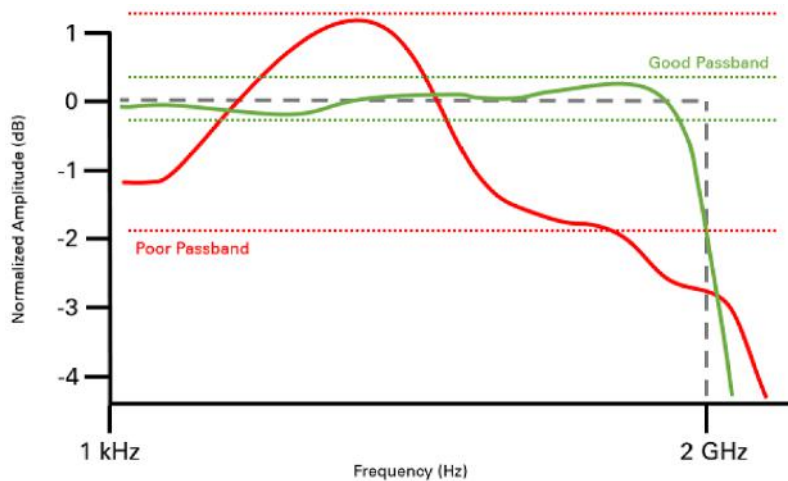
Low Noise

Built-in anti-aliasing filtering prevents high-frequency noise from aliasing into the measured signal, while selectable gain stages ensure maximum utilization of the available 24-bits of ADC resolution. This becomes especially important when measuring low-level signals or when searching for small variations in an otherwise electrically noisy environment.
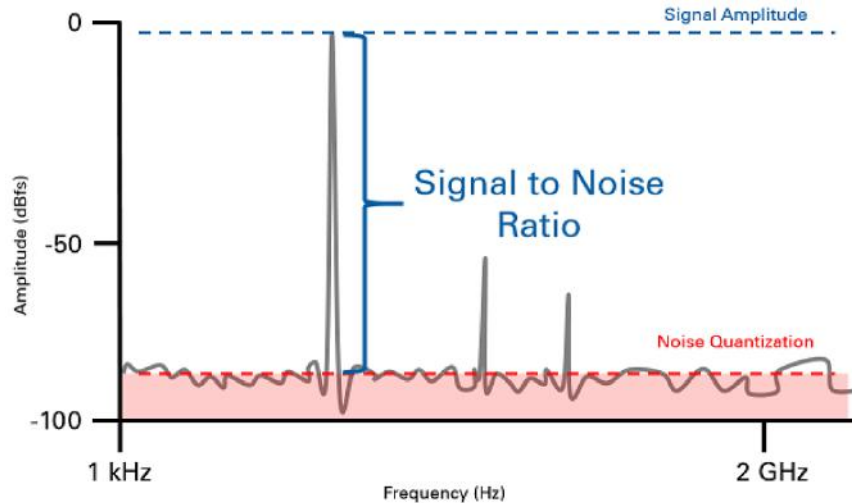

Synchronization and Integration

PXI Sound and Vibration Modules use the inherent timing and synchronization capabilities of the PXI platform to synchronize measurements between multiple modules, which is ideal for high-channel-count applications. PXI builds on its CompactPCI architecture base by adding integrated timing and synchronization that is used to route synchronization clocks and triggers internally. A PXI chassis incorporates a dedicated 10 MHz system reference clock, PXI trigger bus, star trigger bus, and slot-to-slot local bus, while a PXI Express chassis adds a 100 MHz differential system clock, differential signaling, and differential star triggers to address the need for advanced timing and synchronization.

## Self-Calibration and Two-Year Guaranteed Specifications

The warranted specifications of all National Instruments data acquisition devices and modules are guaranteed to fall within the published limits for at least a year from factory calibration. Many devices and modules include a high precision on-board reference and a self-calibration feature for intermittent calibrations during use. This technology helps to correct for changes in the performance of the hardware

over the normal range of operating conditions, like local changes in temperature. For guaranteed performance over time, external calibration services are provided to return a device to its "factory" performance state. This once again guarantees performance to the published specifications for an additional calibration interval of at least one year.
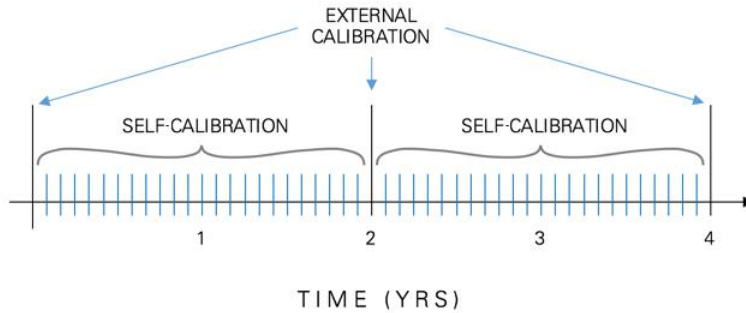
NI-DAQmx Application Programming Interface (API)

The NI-DAQmx driver includes a best-in-class API that works directly with a variety of development options including LabVIEW, DAQExpress, C, C#, Python, and others. The native integration provides exceptional performance and a seamless experience without the need for manual wrapping of functions. To ensure long-term interoperability of DAQ devices, the NI-DAQmx driver API is the same API used for all NI DAQ products – meaning re-development efforts can be minimized regardless of hardware changes or upgrades. Additionally, the driver provides access to help files, documentation, and dozens of ready-to-run shipping examples you can use as a starting point for your application.
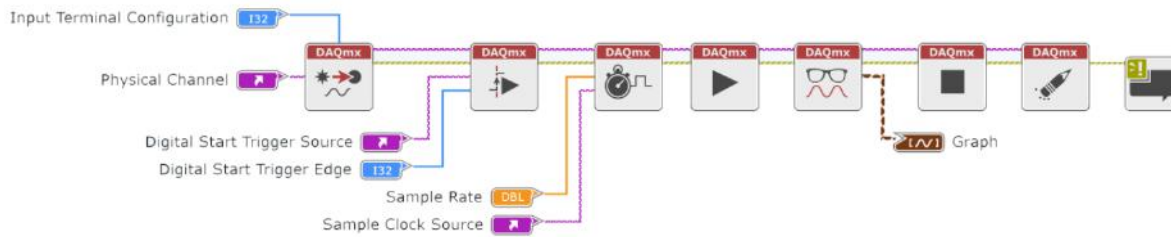
FlexLogger Software

FlexLogger is the ultimate tool for configuration-based data logging. Set up sensors and synchronize mixed signals, all without programming. FlexLogger provides a configuration-based workflow to accomplish validation and verification tasks with NI CompactDAQ, FieldDAQ, and PXI DAQ hardware. You can use sensor-specific configuration workflows to quickly set up, visualize, and log mixed synchronized measurements from analog sensors, digital signals, and vehicle communication buses. You can also generate voltage, current, or digital signals to drive actuators or control set points.

FlexLogger automatically saves metadata documenting your test configuration, so you can quickly trace test results and make comparisons across multiple tests. You can interactively review test results in the integrated data viewer to visually inspect your data and draw conclusions.
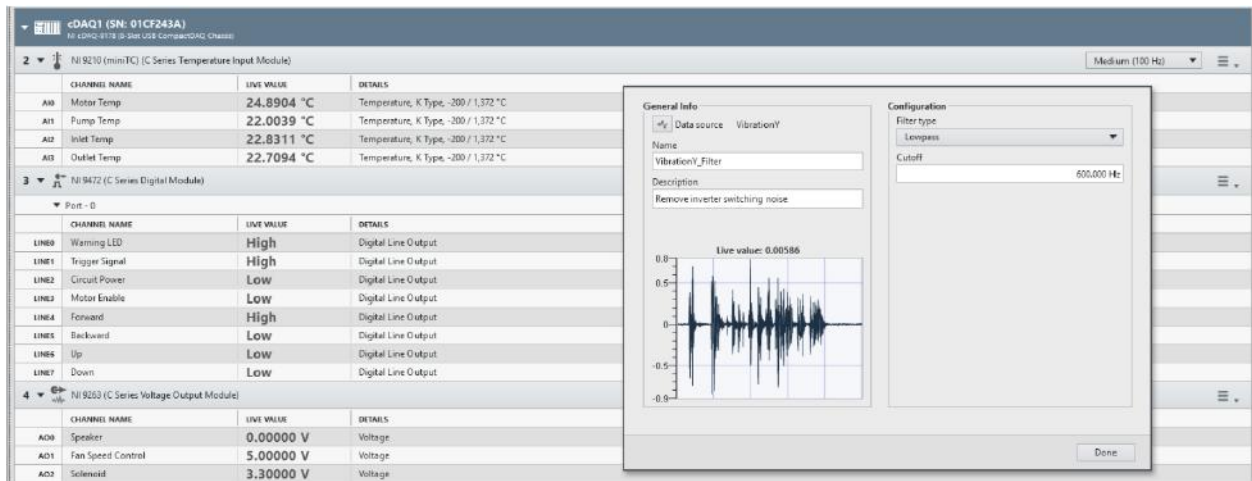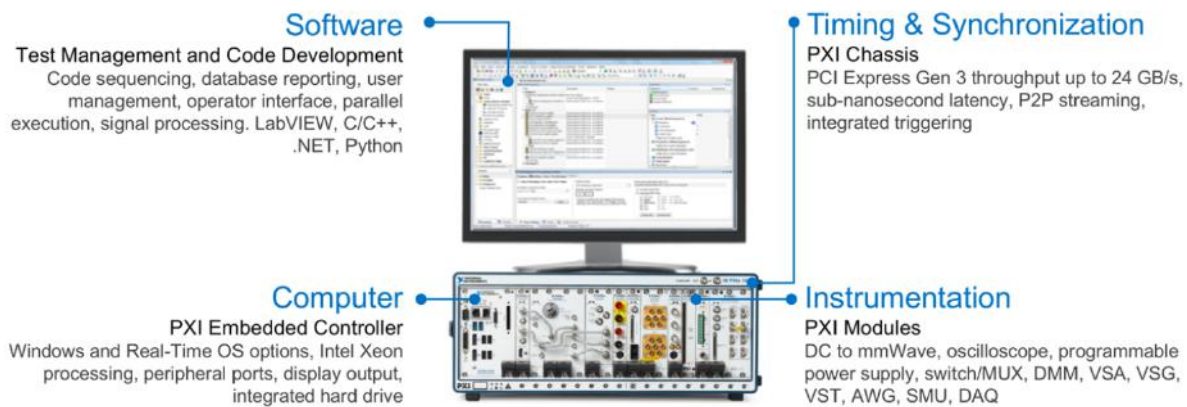

"Quick test turnaround is essential to keeping up with the fast design iterations. The workflow in FlexLogger allows us to focus on the physical sensors at hand instead of dealing with ADCs and programming architectures. I can configure and visualize sensor data with a few clicks, which helps me quickly add new measurements to adapt and evolve to the design process."

– Automotive Validation Test Manager

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Platform-Based Approach to Test and Measurement

What Is PXI?

Powered by software, PXI is a rugged PC-based platform for measurement and automation systems. PXI combines PCI electrical-bus features with the modular, Eurocard packaging of CompactPCI and then adds specialized synchronization buses and key software features. PXI is both a high-performance and low-cost deployment platform for applications such as manufacturing test, military and aerospace, machine monitoring, automotive, and industrial test. Developed in 1997 and launched in 1998, PXI is an open industry standard governed by the PXI Systems Alliance (PXISA), a group of more than 70 companies chartered to promote the PXI standard, ensure interoperability, and maintain the PXI specification.

Software
Test Management and Code Development
Code sequencing, database reporting, user management, operator interface, parallel execution, signal processing. LabVIEW, C/C++, .NET, Python

Timing & Synchronization
PXI Chassis
PCI Express Gen 3 throughput up to 24 GB/s, sub-nanosecond latency, P2P streaming, integrated triggering

Computer
PXI Embedded Controller
Windows and Real-Time OS options, Intel Xeon processing, peripheral ports, display output, integrated hard drive

Instrumentation
PXI Modules
DC to mmWave, oscilloscope, programmable power supply, switch/MUX, DMM, VSA, VSG, VST, AWG, SMU, DAQ

Integrating the Latest Commercial Technology

By leveraging the latest commercial technology for our products, we can continually deliver high-performance and high-quality products to our users at a competitive price. The latest PCI Express Gen 3 switches deliver higher data throughput, the latest Intel multicore processors facilitate faster and more efficient parallel (multisite) testing, the latest FPGAs from Xilinx help to push signal processing algorithms to the edge to accelerate measurements, and the latest data converters from TI and ADI continually increase the measurement range and performance of our instrumentation.

HIGHER DATA THROUGHPUT — PCI Express Gen 3

PARALLEL TEST EXECUTION — Multicore Processors

MEASUREMENT ACCELERATION — FPGAs

INCREASED MEASUREMENT RANGE — Data Converters

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Hardware Services

All NI hardware includes a one-year warranty for basic repair coverage, and calibration in adherence to NI specifications prior to shipment. PXI systems also include basic assembly and a functional test. NI offers additional entitlements to improve uptime and lower maintenance costs with service programs for hardware. Learn more at ni.com/services/hardware.

	Standard	Premium	Description
Program Duration	1, 3, or 5 years	1, 3, or 5 years	Length of service program
Extended Repair Coverage	●	●	NI restores your device's functionality and includes firmware updates and factory calibration.
System Configuration, Assembly, and Test[1]	●	●	NI technicians assemble, install software in, and test your system per your custom configuration prior to shipment.
Advanced Replacement[2]		●	NI stocks replacement hardware that can be shipped immediately if a repair is needed.
System Return Material Authorization (RMA)[1]		●	NI accepts the delivery of fully assembled systems when performing repair services.
Calibration Plan (Optional)	Standard	Expedited[3]	NI performs the requested level of calibration at the specified calibration interval for the duration of the service program.

[1]This option is only available for PXI, CompactRIO, and CompactDAQ systems.
[2]This option is not available for all products in all countries. Contact your local NI sales engineer to confirm availability.
[3]Expedited calibration only includes traceable levels.

PremiumPlus Service Program
NI can customize the offerings listed above, or offer additional entitlements such as on-site calibration, custom sparing, and life-cycle services through a PremiumPlus Service Program. Contact your NI sales representative to learn more.

Technical Support
Every NI system includes a 30-day trial for phone and e-mail support from NI engineers, which can be extended through a Software Service Program (SSP) membership. NI has more than 400 support engineers available around the globe to provide local support in more than 30 languages. Additionally, take advantage of NI's award winning online resources and communities.

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11 March 2020

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