PRECISION MODULAR INSTRUMENTS

pxiExpress

RELIABLE DATA FIRST TIME EVERY TIME

VTI Instruments

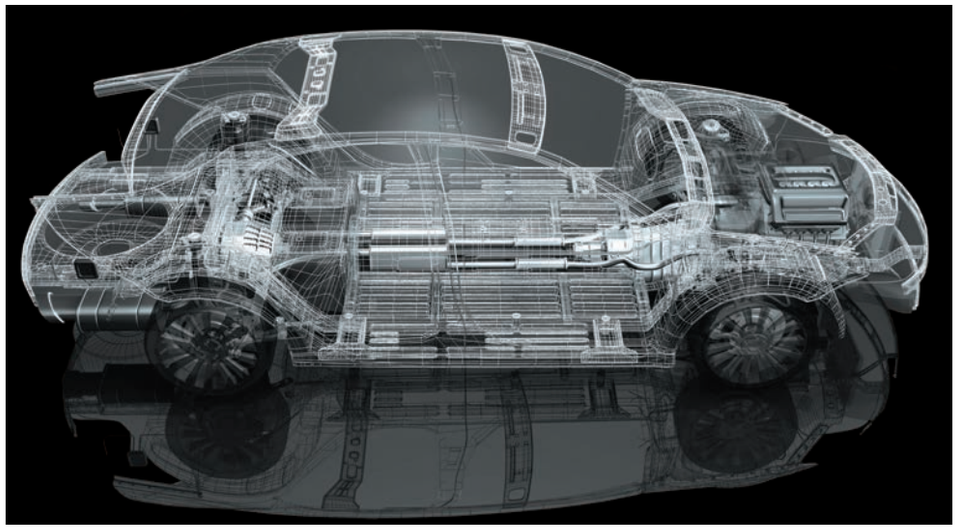
OUR HISTORY

VTI delivers precision modular instrumentation, subsystems, and complete test stations for the world's most demanding electronic and mechanical test applications. Applications range from complete structural test of commercial and military aircraft, vehicle management, aircraft and power turbine engine qualification, highly accelerated life testing, to functional electronic test of missile systems that our troops depend upon.

Our customer list is comprised of leading global Fortune 1000 companies who depend on our instrumentation to support all phases of test, from R&D through production, depot level, and obsolescence management. Virtually every major ATE system design utilizes VTI signal switching and analog I/O as part of its core. Large corporations and defense organizations worldwide depend on the product performance of VTI Instruments to help them maintain a competitive edge in today's global market and preserve the integrity of their brand.

A sustained focus on innovation and technology enables our customers to optimize their capital investment through product longevity, while ensuring unmatched measurement integrity and data reliability. VTI serves the aerospace, defense, energy, power generation, automotive, and commercial electronics industries.

OUR PHILOSPHY



Knowing our customer base and the applications space we cover, we design our solutions with certain core philosophies in mind :

RELIABILITY

VTI is the first choice for mission critical applications or applications where the cost of test is high and failure is not an option - for example missile system testing, solid rocket motor testing, and high end consumer products such as smart phones. VTI's products are recognized in the industry for their reliability, and are designed with built-in capabilities like internal self-test and self-calibration to maximize measurement confidence.

PRECISION AND PERFORMANCE

Our strength is in hardware and our products are designed to maximize accuracy, precision and performance. We are among the top 3 companies worldwide for thermocouple measurement accuracy. We are among the top 2 companies worldwide for strain and bridge measurement accuracy. We are the gold standard for dynamic signal analysis/noise vibration harshness testing with the largest installed base for this application. We are the number one company for signal distribution and conditioning with our signal switching solutions forming the core of virtually every major ATE system worldwide. And, we are the only company with this level of excellence across all these domains.

LONGEVITY

Our customers expect their test systems to last at least as long as the products they test. This can especially be a challenge in the aerospace and defense industries where products typically last more than a decade. This is why every product VTI designs conforms to industry standards and are not dependent on operating system, application software, or host PC. In addition, our products are designed to minimize obsolescence and guarantee long-term support. Some of our products introduced 15+ years ago are still sold and supported by us.

20+ YEARS OF INDUSTRY LEADERSHIP

Leading Supplier of Data Acquisition Hardware and Software

Design and Deliver Precision Modular Instrumentation and Data Acquisition Systems

VXI bus | LXI LAN eXtensions for Instrumentation | PXI Systems Alliance

Serve High Reliability Markets Where Measurement Performance is Critical

Industry Recognition from Peers and Customers

- INDUSTRY LEADING DATA ACQUISITION AND PRECISION INSTRUMENTATION PROVIDER
- GLOBALLY RANKED AS AN INDUSTRY LEADER BY LEADING INDEPENDENT RESEARCH COMPANIES
- WORLDWIDE SALES, SERVICE & SUPPORT
- ELECTRONIC TEST
- EMBEDDED ELECTRONIC APPLICATIONS
- MECHANICAL / ENVIRONMENTAL MONITORING & TEST
- MILITARY / AEROSPACE
- ENERGY / POWER GENERATION
- HIGH-END CONSUMER GOODS AND MEDICAL DEVICES

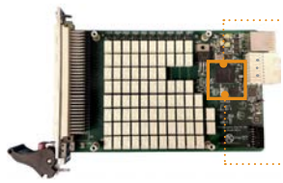
WHY PXI EXPRESS?

Incorporated in 1990 designing VXI plugin modules, VTI grew to be the number one VXI solutions provider worldwide. In 2005, we cofounded LXI which is the standard for Ethernet based test and measurement instruments.

VTI did not develop traditional PXI based instruments because parallel bus based PC architectures were inherently susceptible to obsolescence, restricting longevity to our customers. Also, PXI did not offer a significant bandwidth advantage over LXI.

However, PXI Express addressed these limitations, with PCI Express being the central fabric for virtually every electronic system architecture today. Leveraging other advancements in IC technology and model-based programming, VTI incorporated all PXI infrastructure in an embedded System-on-a Chip (SoC), eliminating dependence on IC manufacturers and guaranteeing long term support. In addition the high-speed serial bus architecture allows unmatched data transfer rates that can support our high-performance data acquisition instruments.

PXIe Advantages from VTI Instruments



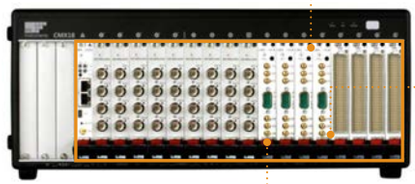
Embedded SoC architecture eliminates component obsolescence concerns and guarantees long-term support

Soft FPGA cores based on AXI industry standard

Smart-switch display for health monitoring, debugging and control

Industry's first Gigabit Ethernet LXI controller for PXI Express

Industry's first PXI MultiComputing ready 9-slot mainframe allowing unmatched data processing capability



IEEE-1588 distribution over backplane enabling usage in distributed environments

High-speed 8 GB/s throughput for even the most data intensive applications

RESTful HTTP interface extends PXI Express for web-integration and cloud-based application development

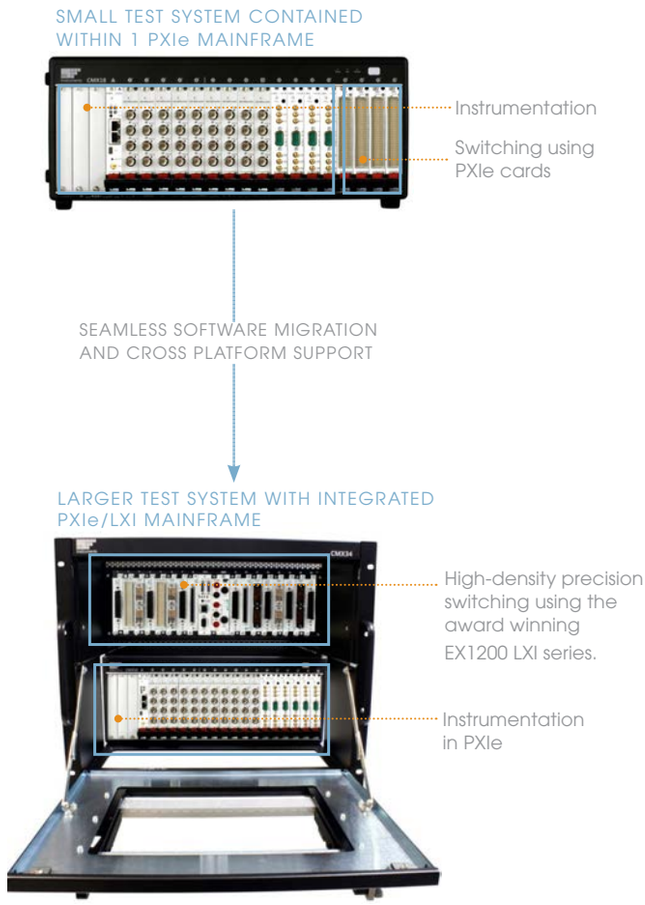
Scalable from table-top to rack-mount to integrated ATE subsystems.

Hybrid Test Systems

In today's world, test systems ideally mix various platforms to arrive at the best performing and most cost effective solution. There are several industry standard platforms including VXI, PXI/PXI Express, LXI, GPIB and USB, each with its own benefits that make it useful for a particular application. No bus is perfect for all needs and applications, but by combining different platforms in a hybrid system, users can optimize the performance of their test systems to achieve best results.

While the PXI Express architecture is ideal for data intensive applications where high sample rates and channel counts can choke a traditional communications interface, it is not always well suited for other applications where LXI might be a better option. That is why VTI designed our PXIe systems to simplify interoperability with LXI and tightly integrate into a hybrid test system. For example, VTI's PXIe mainframes are uniquely designed with IEEE-1588 distribution on the backplane to enable synchronization with external LXI systems. Also, VTI's LXI and PXIe products leverage common instrument drivers or common API structure to enable simplicity in application development in multi-platform systems.

The CMX34 is an integrated subsystem that combines the high throughput of an 18-slot PXI Express mainframe for data intensive applications, with a 16-slot LXI mainframe uniquely optimized for signal switching and I/O.



Software

"LEAN" OPEN INSTRUMENT DRIVERS

With our experience as both an instrument manufacturer and a system integrator, we understand how our customers use our products and deliver software frameworks that save time and money in software development, and simplify system usage.

The most significant investment of any automated test project resides in the system software. VTI's commitment to delivering open architecture solutions extends to software utilities and tools that reduce development time while maximizing the flexibility to choose the application development environment.

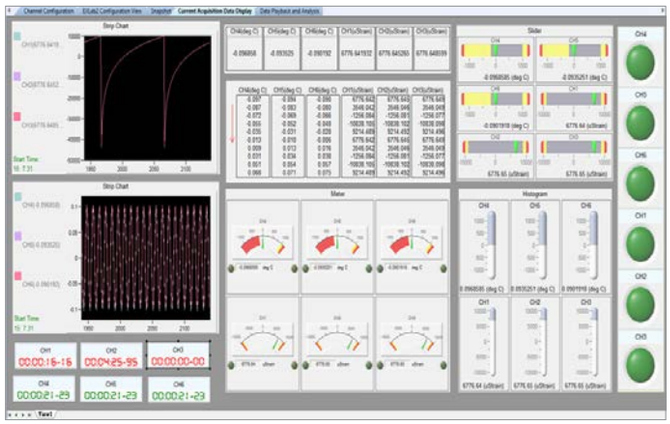
The industry standard drivers support application development in all common environments including C#, Visual Basic, LabVIEW, Python, C/C++, and Java. VTI's innovative approach to driver development also provides true operating system independence with drivers that work seamlessly in Windows and Linux.

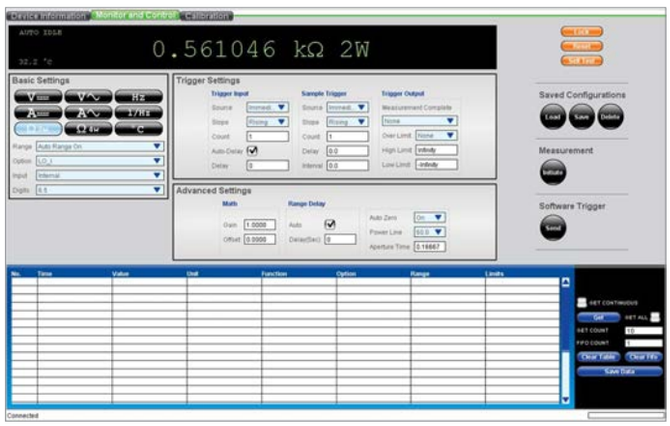
Labview is a registered trademark of National Instruments.
MATLAB is a registered trademark of The MathWorks
Windows, Visual Studio are registered trademarks of Microsoft Corp.
Mac OS is a registered trademark of Apple Inc.

All VTI's PXIe products can be controlled programmatically using IVI Drivers. These open platform 'lean' drivers are less than 20 MB in size in contrast to multi-gigabyte drivers from our competitors that can be difficult to download, install, and update. In addition, all products include a web-based soft front panel for basic monitor and control, which does not require any 3rd party software other than a web browser.

EXLab

Turn-key data acquisition software solutions





- High Speed Data Acquisition
- General Purpose Data Logging
- Structural Testing
- Process and Plant Monitoring
- Performance and Event Monitoring
- HALT / HASS Product Evaluation
- Engine Test Cell Acquisition

VTI Instruments EXlab data acquisition software suite is an intuitive icon-based solution that simplifies instrument configuration, acquisition, data display, and post processing without sacrificing functionality or performance. If your measurements include acoustic, vibration, temperature, pressure, strain, voltage, digital states, RPM or other transducer-based parameters, and you're feeling the pressure of time, then an EXLab-based system is the right solution for you.

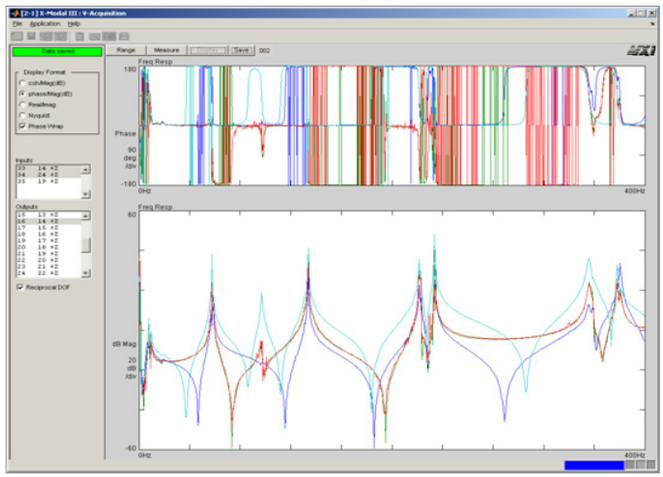
X-Modal III

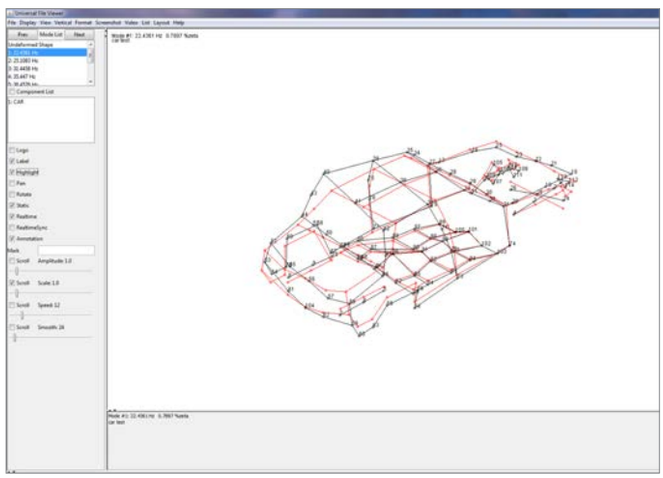
Turn-key data acquisition software solutions

- Modal Analysis
- Ground Vibration Testing (GVT)
- MIMO Shaker Testing
- Multi-Reference Impact Testing
- Problem analysis and Troubleshooting

X-Modal III is a comprehensive modal analysis package featuring intuitive, task oriented user interfaces, extensive modal parameter estimation algorithms, parallel display capabilities, flexible data management, and embedded data acquisition capabilities.

Developed by one of the leading research universities in modal analysis and structural dynamics, and supported by leading structural testing groups in aerospace, defense and automotive industries, X-Modal III is used for the most complicated modal test applications in the world.





PXI Quick Reference Guide

MAINFRAMES

Model	Description
CMX09	9-slot 3U PXI Express chassis, up to 8 GB/s
CMX18	18-slot 3U PXI Express chassis, up to 8 GB/s
CMX34	Integrated PXIe/LXI subsystem with receiver interface mechanism

CONTROLLERS

Model Name	Description
EMX-2500	Gigabit Ethernet LXI controller for PXIe mainframes
EMX-2401	Intel Core i5 2.4 GHz, 8GB RAM, 160 GB hard drive, PXIe embedded controller
PXIe-PCIe8361	PCI Express (x1 Gen 1) control of PXI Express, 208 MB/s practical throughput
PXIe-PCIe8381	PCI Express (x8 Gen 2) control of PXI Express, 3.2 GB/s practical throughput
PXIe-PCIe8388	PCI Express (x16 Gen 2) control of PXI Express, 5.6 GB/s practical throughput
PXIe-6674T	Timing and multichassis synchronization module

DIGITIZERS

Model Name	Description	Sample rate	Channel Count	Resolution
EMX-4350	4-channel, 625 kSa/s, 24-bit PXIe "smart" dynamic signal analyzer with IEPE/voltage input	625 kSa/s	4	24-bit
EMX-4380	4-channel, 625 kSa/s, 24-bit PXIe "smart" dynamic signal analyzer with charge type input	625 kSa/s	4	24-bit
EMX-4250 EMX-4251	16 (EMX-4250) or 8 (EMX-4251) channel, 204.8 kSa/s, 24-bit PXIe "smart" dynamic signal analyzer with IEPE/Volt input	204.8 kSa/s	16 or 8	24-bit
EMX-4016 EMX-4008	16 (EMX-4016) or 8 (EMX-4008) channel, breakout box with BNCs for EMX-4250 and EMX-4251	N/A	16 or 8	N/A
PXI-2005	4-channel, 500 kSa/s, PXI-Hybrid digitizer with integrated waveform generator, digital I/O and counter	500 kSa/s	4	16-bit
PXI-2010	4-channel, 2 MSa/s, PXI-Hybrid digitizer with integrated waveform generator, digital I/O, and counter	2 MSa/s	4	14-bit
PXI-2022	16 channel, 250 kSa/s, PXI-H digitizer with integrated waveform generator, digital I/O, and counter	250 kSa/s	16	16-bit
PXI-2204	64-channel, 3 MSa/s, PXI-H scanning digitizer with integrated waveform generator, digital I/O, and counter	3 MSa/s	64 SE or 32 DE	12-bit
PXI-2205	64-channel, 500 kSa/s, PXI-H scanning digitizer with integrated waveform generator, digital I/O, and counter	500 kSa/s	64 SE or 32 DE	16-bit
PXI-9846D	4-channel, 16-bit, 40 MSa/s, PXI-H digitizer	40 MSa/s	4	16-bit
PXIe-9848	8-channel, 14-bit, 100 MSa/s, PXIe digitizer	100 MSa/s	8	14-bit

PXI Quick Reference Guide

WAVEFORM GENERATORS

Model Name	Description	Sample rate	Channel Count	Resolution
EMX-1434	4-channel , 204.8 kSa/s arbitary source with integrated 2-channel 64-bit tachometer input and 4 channels DIO	204.8 kSa/s	4	24-bit
PXI-2502	8-channel, 1MSa/s analog output multi-function PXI-H module	1 MSa/s	8	12-bit

DMM

Model	Description
M9183A	PXI-H Digital Multimeter, 6½ digit, Enhanced Performance

COMMUNICATION BUSES

Model Name	Description
PXI-C429-4	4-channel ARINC-429 on PXI-H
PXI-C429-8	8-channel ARINC-429 on PXI-H
PXI-C429-16	16-channel ARINC-429 on PXI-H
PXI-C429-32	32-channel ARINC-429 on PXI-H
PXI-C1553-1	Single, dual-redundant 1553 channel on PXI-H
PXI-C1553-2	Dual ,dual-redundant 1553 channel on PXI-H
PXI-C1553-4	Quad, dual-redundant 1553 channel on PXI-H

SWITCH CARDS

Model Name	Channels	Configuration	Switched V/A	Switched Power (Max)	Bandwidth
SMX-2002	12	SPDTs	250 VAC/300 VDC, 16 A	480 W, 4000 VA	40 MHz
SMX-3276	152	2x (1x76) 1-wire, 2x (1x38) 2-wire, or 1x (1x38) 4-wire mux	300 VAC/300 VDC, 2 A	60 W, 62.5 VA	30 MHz
SMX-4410	160	4x (4x10) 2-wire matrix	300 VAC/300 VDC, 2 A	60 W, 62.5 VA	45 MHz
SMX-5001	80	SPSTs	300 VAC/300 VDC, 2 A	60 W, 62.5 VA	80 MHz
SMX-6301	4	SP4Ts	30 VDC, 0.5 A	10 W	3 GHz
SMX-6301T	4	Terminated SP4Ts	30 VDC, 0.5 A	10 W	3 GHz
SMX-7121	1	SPDT	N/A	N/A	26.5 GHz
SMX-7122	2	SPDT	N/A	N/A	26.5 GHz
SMX-7200	N/A	2-slot microwave switch carrier with relay driver	N/A	N/A	Upto 26.5 GHz

Mainframes

CMX09

9-Slot 3U PXI Express Chassis, up to 8 GB/s

FEATURES

9-slot PXI Express mainframe with 1 system controller slot, 6 PXIe peripheral slots, 1 PXI Hybrid slot and 1 PXIe timing slot.

8 GB/s system throughput and 2 GB/s per slot throughput to satisfy even the most data intensive applications

First PXIe Multi -Computing Ready mainframe with the ability to support multiple root complexes

IEEE-1588 distribution extends PXIe for use in distributed applications

True 4U chassis

Smart switch display simplifies monitoring, control and debugging

Table-top, rack-mount, and shock-mount options available

CMX18

18-Slot 3U PXI Express Chassis, up to 8 GB/s

FEATURES

18-slot PXI Express mainframe with 1 system controller slot, 6 PXIe peripheral slots, 10 PXI Hybrid slots and 1 PXIe timing slot

8 GB/s system throughput and upto 4 GB/s per slot throughput to satisfy even the most data intensive applications

IEEE-1588 distribution extends PXIe for use in distributed applications

True 4U chassis

Built-in system-monitoring provides confidence in system operation and simplifies debugging

Table top and rack-mount options available

Mainframes

CMX34

Integrated PXIe/LXI Subsystem with Receiver Interface Mechanism

FEATURES

Achieve best performance with hybrid test system that combines exceptional data throughput of PXI Express with an LXI mainframe uniquely optimized for signal switching

PXIe mainframe with high bandwidth PCIe Gen 2 backplane with 4 GB/s bandwidth per slot and 8 GB/s system bandwidth

EX1200 LXI mainframe for signal switching and I/O where the real estate allows instrument-grade performance

Fully integrated, including cables and receiver modules, and ready to drop into a test system

Subsystems engineered to maximize signal integrity and delivered fully tested and verified to guarantee results

Save time and money in sourcing, development and deployment

An integrated cable tray allows cabling of other instruments to the receiver mechanism

Controllers

EMX-2500

Gigabit Ethernet LXI Remote Controller for PXI Express Systems

FEATURES

Industry's first Gigabit Ethernet LXI remote controller for PXI Express mainframes

Up to 100 MB/s sustained throughput

Allows remote access to VTI's sentinelEX family of PXIe instruments from anywhere in the world on any internet enabled device

Multi-chassis synchronization using precision IEEE-1588-2008 standard time source

Easy to set up for distributed data acquisition systems

Simplified instrument discovery and usage using IP address

Bi-directional SMB Trigger I/O for advanced PXIe trigger functions

IVI drivers supporting wide variety of application development environments and operating systems

RESTful HTTP protocol for cloud computing and advanced web applications

EMX-2401

3U, Intel® Core™ i5 Embedded Controller for PXI Express Systems

FEATURES

Powerful computing power with Intel® Core™ i5-520E 2.4 GHz processor

Dual channel DDR3 SODIMM, Up to 8 GB 1066 MHz

Up to 2 GB/s system throughput

Configurable PXI Express link: four link x4 or two link x8

Integrated SATA hard drive: 160 GB, 7200 RPM

Integrated I/O enabling hybrid test-systems: dual Gigabit Ethernet ports, four USB 2.0 ports, micro-D GPIB connector, ExpressCard/34 expansion slot

Bi-directional SMB Trigger I/O for advanced PXIe trigger functions

Extended 0 °C to 55 °C operating temperature

Integrated Intel® graphics with DVI and VGA support. Up to 1920 x1200 resolution at 0 Hz and 2048 x 1536 at 75 Hz

Programmable watchdog timer

Controllers

PXIe-PCIexxxx

PCI Express Control of PXI Express

FEATURES

Achieve sustained throughput up to 5.6 GB/s using PCI Express control of PXI Express mainframes

Control up to two PXI Express mainframes with a single PCI Express board

Cabled PCI Express spec compliant

Software transparent link that requires no programming

Cabling up to 7 m

DMM's

M9183A

6.5 Digit, High Performance, PXI-H DMM

FEATURES

6½ digit resolution

High throughput: up to 15,000 readings/s, 66 µs single reading interval

DCV basic one year accuracy: 40 ppm

Ten standard measurements: DCV, ACV, DCI, ACI, 2- and 4-wire resistance, frequency, period, capacitance, and temperature

External trigger in and DMM out to synchronize with external multiplexers and instruments

Analog threshold trigger with pre- and post- levels for measuring the correct signal

Floating isolation (CAT II) up to 300 V

Digitizers

EMX-4250/EMX-4251

16/8-Channel, 204.8 kSa/s, 24-bit, "Smart" DSA Digitizer, IEPE, and Voltage

FEATURES

EMX-425x smart dynamic signal analyzers are designed to provide highdensity, large channel count capability for NVH applications. Leveraging VTI's world class signal conditioning expertise, the EMX-425x cards provide a no compromise solution for almost any NVH application. They are designed to be scalable to systems > 1000 channels using Gigabit Ethernet and IEEE-1588 for distributed synchronization. Using the sentinelEX high-speed PXIe backplane allows for very high throughput capability. Break out boxes provide flexible connectivity to interface sensors and signal inputs.

EMX-4250/EMX-4251			
Platform	PXI Express	**TEDS**	IEEE 1451.4
Channels	16 (EMX-4250) 8 (EMX-4251)	**Digital Filter**	Fully programmable in FPGA
Resolution	24-bit	**IEPE Excitation**	4.5 mA or 10 mA Nominal, programmable
Sample Rate	Max 204.8 kSa/s, Min 0.1 Sa/s	**Open Transducer**	Breakout box LED and software
Input Type	IEPE (psuedo-differential), volts (differential or psuedo-differential) AC/DC coupling	**Embedded Self-test**	Yes
Ranges	0.1 V, 0.2 V, 0.5 V, 1 V, 2 V, 5 V, 10 V	**Embedded Self-calibration**	Yes
SFDR	-105 dBfs, 10 V range, 1 kHz test frequency	**Onboard Memory**	1 Gb
CMRR	> 80 dB @ 1 kHz	**Input Connector**	25-pin Micro-D to BNC on breakout box

EMX-4008/4016

16/8-Channel, High-Performance Breakout Boxes with Fault Indicator

FEATURES

The EMX-4008 and EMX-4016 provide an easy and quick option for connecting transducers into the EMX-425x cards. They provide BNC connections which provide a robust connection for most signal types. In addition, the EMX-4008 and EMX-4016 provide both an external trigger connector and an external calibration input connector to facilitate calibration of the EMX-425x. These breakout boxes are designed to leverage the 4 mA or 10 mA IEPE current from the EMX-425x.

Both the EMX-4008 and EMX-4016 have LED indicators per channel to indicate potential problems with IEPE transducers: red for open or short circuit, green for IEPE current on. This way you can quickly determine any setup problems.

EMX-4008/4016			
Channels	EMX-4008: 8 EMX-4016: 16	IEPE Current	4.5 mA or 10 mA
Connector	BNC	IEPE Compliance Voltage	> 21 V
Cable Length	1 m, 2 m options		

Digitizers

EMX-4350

4-Channel, 625 kSa/s, 24-bit, "Smart" DSA Digitizer, IEPE, and Voltage

FEATURES

The EMX-4350 smart dynamic signal analyzer incorporates best-in-class analog design methodology to deliver industry leading measurement accuracy. This instrument is ideal for a wide range of applications including noise, vibration, and harshness (NVH), machine condition monitoring, rotational analysis, acoustic test, modal test, as well as general purpose high speed digitization, and signal analysis.

EMX-4350			
Platform	PXI Express	TEDS	IEEE 1451.4
Channels	4	Digital Filter	Fully programmable in FPGA
Resolution	24-bit	IEPE Excitation	2 mA to 20 mA programmable
Sample Rate	Max 625 kSa/s, Min 0.156 Sa/s	Open Transducer	Front panel LED and software
Input Type	Fully Differential, AC/DC coupling, IEPE, voltage	Embedded Self-test	Yes
Ranges	100 mV, 1 V, 10 V, 20 V	Embedded Self-calibration	Yes
SFDR	-125 dBfs	Onboard Memory	1 Gb
CMRR	> 80 dB @ 1 kHz	Input Connector	BNC

EMX-4380

4-Channel, 625 kSa/s, 24-bit, "Smart" DSA Digitizer, IEPE, Charge, and Voltage

FEATURES

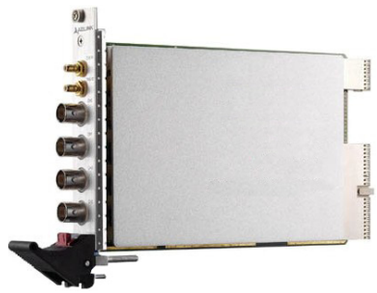
The EMX-4380 builds on the performance of the EMX-4350 by adding support for charge-type transducers inputs. This gives users a single card solution for virtually any noise and vibration application. By using a single card for either IEPE or charge inputs, users are able to simplify configuration control, calibration, and asset management.

EMX-4380			
Platform	PXI Express	TEDS	IEEE 1451.4
Channels	4	Digital Filter	Fully programmable in FPGA
Resolution	24-bit	IEPE Excitation	4.5 mA to 10 mA programmable
Sample Rate	Max 625 kSa/s, Min 0.156 Sa/s	Open Transducer	Front panel LED and software
Input Type	Fully differential, AC coupling, IEPE, charge, voltage	Embedded Self-test	Yes
Ranges	IEPE/Volts: 100 mV, 1 V, 10 V, 20 V Charge: 100 pC, 1 nC, 10 nC	Embedded Self-calibration	Yes
SFDR	-100 dBfs	Onboard Memory	1 Gb
CMRR	60 dB	Input Connector	BNC

Digitizers

PXI-9846D

4-Channel, 16-bit, 40 MSa/s, PXI Hybrid Digitizer with 512 MB Memory



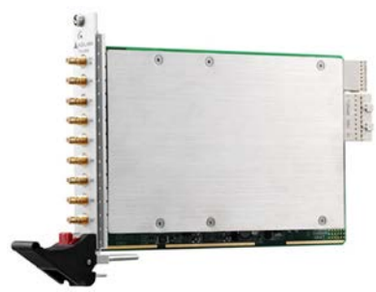
FEATURES

The PXI-9846D is a 40 MSa, 16-bit, 4-channel digitizer designed for digitizing high frequency and wide dynamic range signals with input frequencies up to 20 MHz. The 512 MB deep onboard acquisition memory enables the recording of waveforms for extended periods of time. The PXI-9846D is equipped with four high linearity 16-bit A/D converters ideal for demanding applications such as radar, ultrasound, and software-defined radio.

PXI-9846D			
Platform	PXI Hybrid	**SNR**	76.17 dBc
Channels	4	**-3 dB Bandwidth Typical**	96.15 dBc
Resolution	16-bit	**THD**	-96.78 dBc
Sample Rate	40 MSa	**Clock**	Internal (1 MHz to 40 MHz) or external
Input Type	Single-ended, DC coupling only	**Memory**	512 MB
Ranges	±0.2 V, ±1 V	**Auto-calibration**	Yes

PXIe-9848

8-Channel, 14-bit, 100 MSa, PXI Express Digitizer with 512 MB Memory



FEATURES

The PXIe-9848 is an 8-channel, 14-bit, 100 MSa digitizer for high frequency and wide dynamic range signals with input frequencies up to 100 MHz. With a PCI Express bus interface and ample onboard acquisition memory up to 512 MB, the PXIe-9848 easily manages simultaneous 8-ch data streaming even at a full 100 MSa/s. Equipped with high speed and high linearity 14-bit A/D converters, the PXIe-9848 is ideal for applications requiring high-speed data acquisition, such as PSU (power supply unit) testing, LIDAR testing, and radar signal acquisition.

PXIE-9848			
Platform	PXI Express	**Ranges**	±0.2 V, ±2 V
Channels	8	**-3 dB Bandwidth Typical**	100 MHz
Resolution	14-bit	**Memory**	512 MB
Sample Rate	Single-ended, AC or DC coupling	**Auto-calibration**	Yes
Input Type	100 MSa	**Triggering**	Software, external, PXI star, PXI trigger bus

Digitizers

PXI-2005 and PXI-2010

4-Channel, Up to 2 MSa/s PXI-Hybrid Digitizer with Integrated Waveform Generator, Digital I/O, and Counter

FEATURES

The PXI-2005 and PXI-2010 are simultaneous-sampling multi-function DAQ cards designed to meet a wide range of application requirements. The devices can simultaneously sample 4 analog input channels with differential input configurations in order to achieve maximum noise elimination. They also provide 2-ch 12-bit analog outputs with waveform generation capability, which can be performed together with analog input functions. The PXI-2005/10 also feature analog and digital triggering, 24-ch programmable digital I/O lines, and 2-ch 16-bit general-purpose timer/counter.

PXI-2005 AND PXI-2010			
Platform	PXI Hybrid	Analog Output Range	0 to 10V or ± Ext Ref
Channels	4 digitizer, 2 dnalog output, 24 digital I/O, 2 timer/counter	Analog Output Resolution	12-bit
Resolution	PXI-2005: 16-bit PXI-2010: 14-bit	DIO Compatibility	5 V/TTL
Sample Rate	PXI-2005: 500 kSa PXI-2010: 2 MSa	Timer/counter Resolution	16-bit
Input Type	Differential, DC coupling only	Timer/counter Compatibility	5 V/TTL
Ranges	±1.25 V, ±2.5 V, ±5 V, ±10 V	Auto-calibration	Yes

PXI-2022

16-Channel, 16-bit, 250 kSa PXI-Hybrid Digitizer with Integrated Waveform Generator, Digital I/O, and Counter

FEATURES

The PXI-2022 is a simultaneous-sampling multi-function DAQ card designed to meet a wide range of application requirements. The device can simultaneously sample 16 analog input channels with differential input configurations in order to achieve maximum noise elimination. The PXI-2022 features digital triggering, 4-ch programmable digital I/O lines, and 2-ch 32-bit general-purpose timer/counters.

PXI-2022			
Platform	PXI Hybrid	CMRR	80 dB
Channels	16 digitizer, 4 digital I/O, 2 timer/counter	SFDR	87 dB
Resolution	16-bit	DIO Compatibility	TTL/CMOS
Sample Rate	250 kSa	Output Driving Capacity	±4 mA
Input Type	Differential, DC coupling only	Timer/counter Resolution	32-bit
Ranges	±2.5 V, ±10 V	Auto-calibration	Yes

Digitizers

PXI-2204 and PXI-2205

64-Channel, Up to 3 MSa/s, PXI-Hybrid Scanning Digitizer with Integrated Waveform Generator, Digital I/O, and Counter

FEATURES

The PXI-2205 and PXI-2204 are high-density and high-performance multi-function DAQ card that can sample up to 64 analog input channels. Channel gain settings and scan sequences are adjustable, making it ideal for dealing with high-density analog signals with various input ranges and sampling speeds. These devices also offer differential mode for 32 analog input channels in order to achieve maximum noise elimination. The PXI-2204/05 also feature analog and digital triggering, 2-ch 12-bit analog outputs with waveform generation capability, 24-ch programmable digital I/O lines, and 2-ch 16-bit general-purpose timer/counter.

PXI-2204 AND PXI-2205			
Platform	PXI Hybrid	**Analog Output range**	0 V to 10 V or ± Ext Ref
Channels	64 digitizer, 2 analog output, 24 digital I/O, 2 timer/counter	**Analog Output Resolution**	12-bit
Resolution	PXI-2204: 12-bit PXI-2205: 16-bit	**DIO Compatibility**	5 V/TTL
Sample Rate	PXI-2204: 3 MSa PXI-2205: 500 kSa	**Timer/Counter Resolution**	16-bit
Input Type	SE or DE, DC coupling only	**Timer/counter Compatibility**	5 V/TTL
Ranges	PXI-2204: ±0.05 V to ±10 V PXI-2205: ±1.25 V to ±10 V	**Auto-Calibration**	Yes

Waveform Generators

EMX-1434

4-Channel, 204.8 kSa/s, 24-bit, "Smart" Arbitrary Waveform Generator with Integrated Tach/DIO Inputs

FEATURES

The EMX-1434 is a high performance arbitrary source/tach modular PXIe instrument designed especially for sound and vibration applications. It supports various output modes such as sine, burst sine, chirp, burst-random and continuous random. It also provides 2 channels of 64-bit tach inputs as well as4 channels of digital I/O. With its capability of providing stimulus to a shakers, loudspeakers and other electrical devices. It works best with the EMX series DSA products: EMX-4250, EMX-4350, and EMX-4380. The combination of the EMX-1434 and the EMX series DSA products is ideal for stimulus/ response applications, acoustical, vibration testing, and other complicated mechanical/ electrical testing applications.

EMX 1434			
Platform	PXI Express	Amplitude Range	-20 dB to 0 dB, 1 dB steps
Channels	4 AWG, 4 DIO, 2 Tach	SFDR	115 dB, 0-51.2 kHz
Resolution	24-bit	THD	-98 dB
Sample Rate	0.1 Sa/s to 204.8 kSa/s	Tach Resolution	64 bit
Max Amplitude	± 10 V	Tach Freq Input Range	1 MHz
Max output Current	± 25 mA	DIO Input Range	Vin high = 3.5 V min Vin low = 1.5 V max

PXI-2502

8-Channel, 1 MSa/s, PXI-Hybrid Waveform Generator with Integrated Digitizer, Digital I/O, and Counter

FEATURES

The PXI -2502 is a high-speed and high-performance analog output multi-function DAQ card able to update up to 8-ch, 12-bit analog outputs simultaneously while sustaining a 1 MSa/s rate. The reference sources and the output polarities are programmable on a per channel basis. Combined with a multiplying DAC architecture, the PXI-2502 can generate complex modulated analog signals. The PXI -2502 integrates 4 channels, 400 kSa/s, 14-bit single-ended analog inputs with programmable polarity, 24 channels programmable digital I/O lines, and 2 channels 16-bit general-purpose timer/counter.

PXI-2502			
Platform	PXI Hybrid	Timer/Counter Resolution	16-bit
Channels	8 AWG, 4 digitizer, 24 digital I/O, 2 timer/counter	Timer/Counter Compatibility	5 V/TTL
Resolution	12-bit	Digitizer	400 kSa, 14-bit
Sample Rate	1 MSa/s	Digitizer Input Range	±10 V
Driving Capability	± 5 mA	DIO Compatibility	5 V/TTL
Output Range	±10 V or ± Ext Ref	Auto-Calibration	Yes

Switch Cards

SMX-2002

10-Channel, 16 A SPDT, Instrument Grade PXIe Switch Module

FEATURES

Switch up to 16 A current – highest in its class

Large switching capacity in a small footprint

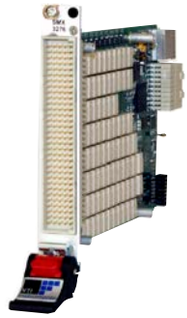
High breakdown voltage (1,000 V rms between open contacts)

Failsafe interrupt detects fault conditions and opens relays to their default state. This protects the test object from damage if a fault occurs.

SMX-2002			
Platform	PXI Express	**Relay Type**	Electromechanical/ failsafe
Channels	10 SPDTs	**Switching Time**	< 10 ms
Max Voltage	250 VAC / 30 VDC	**Rated Switch Operation, No Load**	$1x10^9$
Max Current	16 A switch/carry	**Rated Switch Operation, Full Load**	$5x10^7$
Max Power	480 W / 4000 VA	**Insulation Resistance**	>1 GΩ
Bandwidth	10 MHz	**Connector Type**	41-pin power connector

SMX-3276

76-Channel, 300 V/2 A Flexible Instrument-Grade PXIe Multiplexer



FEATURES

High density 300 V/2 A multiplexer

Two individual (1 x 76) 1-wire, or two (1x38) 2-wire multiplexers or one 1x76 2-wire multiplexer configurable under program control

Instrument-grade performance, 34 MHz bandwidth and -70 dB crosstalk at 100 kHz maximizes signal integrity and allows precision measurement of signals

Internal capacitive discharge relays keep high voltages from disturbing sensitivemeasurement points

SMX-3276			
Platform	PXI Express	**Relay Type**	Electromechanical/ failsafe
Channels	2x (1x76) 1-wire, 2x(1x38) 2-wire, or (1x38) 4-wire	**Switching Time**	5 ms
		Crosstalk	<-55 dB @ 1 MHz
		Isolation	<-55 dB @ 1 MHz
Max Voltage	300 VAC / 300 VDC	**Rated Switch Operation, No Load**	$1x10^8$
Max Current	2 A switch/carry	**Rated Switch Operation, Full Load**	$1x10^7$
Max Power	60 W/62.5 VA	**Path Resistance**	<450 mΩ
Bandwidth	34 MHz	**Connector Type**	160-pin DIN

Switch Cards

SMX-4410

160 Crosspoint, 300 V/2 A Flexible Instrument-Grade PXIe Matrix with Embedded Self-test

FEATURES

Quad (4x10) non-blocking matrix, fully reconfigurable as dual (4x20) or (8x10), or single (4x40) or (8x20)

Switch up to 300 V/2 A – highest at this density in its class

Highest performance matrix in its class >30 MHz and unmatched signal integrity allows precision measurement of signals

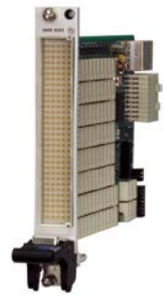
Extensive signal shielding employed on PCBs for excellent signal fidelity

Embedded Self-test mechanism that can be used to determine relay health.

SMX-4401			
Platform	PXI Express	**Relay Type**	Electromechanical/ failsafe
Channels	4 (4X10), or 2 (4x20), or 2 (8x10) or 1 (8x20), or 2 (4x20), or 1 (4x40) 2-wire matrix	**Switching Time**	5 ms
		Crosstalk	<-55 dB @ 1 MHz
		Isolation	<-55 dB @ 1 MHz
Max Voltage	300 VAC / 300 VDC	**Rated Switch Operation, No Load**	$1x10^{8}$
Max Current	2 A switch/carry	**Rated Switch Operation, Full Load**	$1x10^{5s}$
Max Power	60 W/62.5 VA	**Path Resistance**	<450 mΩ
Bandwidth	30 MHz	**Connector Type**	160-pin DIN

SMX-5001

80-Channel, 300 V/2 A Instrument-Grade PXIe Switch Module



FEATURES

Ideal for general purpose switching of up to 300 V (AC/DC) or 2 A

SPST relays can be paired to configure 40 DPST relays

Instrument Grade performance, 50 MHz bandwidth and -55 dB crosstalk at 100 kHz maximizes signal integrity and allows precision measurement of signals

Can be mixed and matched to create application specific configurations

160-pin DIN connector for easy connectivity

SMX-5001			
Platform	PXI Express	**Relay Type**	Electromechanical/ failsafe
Channels	80 SPST / 40 DPST	**Switching Time**	3 ms
		Crosstalk	-55 dB @ 100 kHz
		Isolation	-50 dB @ 100 kHz
Max Voltage	300 VAC / 300 VDC	**RRated Switch Operation, No Load**	$1x10^{8}$
Max Current	2vA switch/carry	**Rated Switch Operation, Full Load**	$1x10^{5}$
Max Power	60vW/62.5 VA	**Path Resistance**	<300 mΩ
Bandwidth	50 MHz	**Connector Type**	160-pin DIN

Switch Cards

SMX-6301/SMX-6301T

Four SP4T, 50 Ω, 3 GHz Instrument-Grade PXIe Multiplexer

FEATURES

Up to four SP4T RF multiplexer trees, >3 GHz bandwidth

Suitable for switching RF signals to/from high bandwidth measurement devices such as oscilloscopes and function generators

All the relays are independently controllable

50 Ω on-board self-termination option (SMX-6301T)

SMB male connectors for high performance

SMX-6301			
Platform	PXI Express	**Relay Type**	Electromechanical/ failsafe
Channels	SMX-6301: Four SP4Ts SMX-6301T: Four SP4Ts Terminated	**Switching Time**	3 ms
Max Voltage	30 VDC	**Crosstalk**	<-45 dB @ 1 MHz
Max Current	0.5 A	**Isolation**	<-35 dB @ 1 MHz
Max Power	10 W	**Rated Switch Operation, No Load**	$1x10^8$
Bandwidth	3 GHz	**Rated Switch Operation, Full Load**	$1x10^5$
Path Resistance	<1 Ω	**Connector Type**	SMB male

SMX-7xxx

DC to 26.5 GHz, PXIe Microwave Switch Carrier and Relay Driver

FEATURES

Switch signals from DC to 26.5 GHz

Building blocks range from dual SPDT relays to SP6T relays, transfer switches and relay drivers.

Microwave building blocks pluggable from the front for simplified servicing

Built in web-based soft front panel automatically detects relay plugged in and populates itself

Built in relay odometer for predictive maintenance

Competitively priced modules to suit OEM/system integration markets

SMX-7XXX			
Platform	PXI Express	**Relay Type**	Electromechanical/ failsafe
PXIe Slot Width	2 slots	**Relay Types**	SPDT, SP4T, SP6T, transfer switches
Bandwidth Range	DC to 26.5 GHz	**Number of Plugin Modules Supported**	Upto 3 (any relay type)
Path Resistance	<1 Ω	**Relays**	SMXR-7200: pass through adaptor SMXR-7202: 2 SPDT SMXR-7204: SP4T SMXR-7206: SP6T SMXR-7222: Transfer switch

Communication Busses

PXI-C429-xx

Advanced 4-8-16-32 Channel ARINC 429 Test and Simulation PXI Hybrid Module

FEATURES

Four (PXI-C429-4), Eight (PXI-C429-8), 16 (PXI-C429-16), or 32 (PXI-C429-32) Software Programmable Tx/Rx Channels

Programmable high/Low speed operation

Concurrent operation of all Tx/Rx channels at high speed rates

PXI interrupts, star trigger, and PXI clock

Trigger generation on ARINC 429 bus events

Full error injection and detection

Rate-oriented label transmission

Label selective trigger for capture/filtering

IRIG-B Time code encoder/decoder

Real-time recording and post analysis of multiple channels

PXI-C1553-xx

Extended Function MIL-STD-1553A/B Test and Simulation PXI Hybrid Modules

FEATURES

One (PXI-C1553-1), two (PXI-C1553-2), or four (PXI-C1553-4) dual redundant MIL-STD-1553 bus interfaces

Concurrent BC, multiple RT (31), and BM operations

Full error injection and detection

Data capture filtering, 100% bus recording, and physical bus replay

PXI trigger generation on 1553 bus events

Initiate data simulation (BC) and data capture (BM) on PXI triggers

Onboard time-tag clock synchronization to external IRIG or PXI system clock

Variable output voltage signal and software selectable bus coupling modes

10 high voltage (up to 30 V) programmable DIO lines

VTI INSTRUMENTS

PRECISION MODULAR INSTRUMENTS

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