

What's new in NI

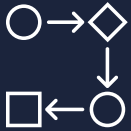
Hardware & Software

Andrej Drozg

ADD ProS

Test & Measurement is Changing Faster Than Ever

T&M is facing an unprecedented increase in complexity. Test engineers are spending more time planning, designing complex systems, and generating insights



**Comprehensive Test
Strategizing & Planning**



**Complex, Multi-Domain
Test Systems**



**AI Accelerated
Software Development**



**Benchtop to Enterprise
Test Operations**

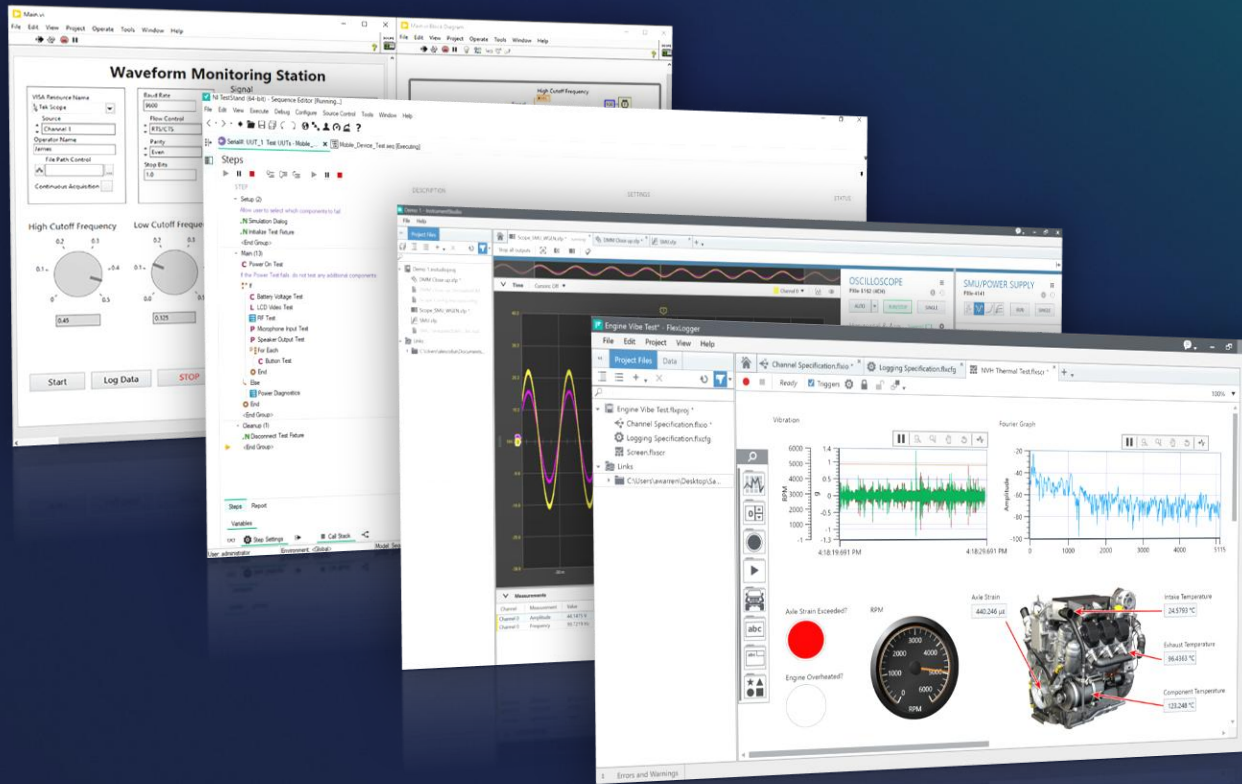


**AI Driven Analysis of
Large Datasets**



**Multi-Disciplinary
Test Organizations**

LabVIEW+ Suite 2026



Accelerating Test Engineering Workflows

Nigel AI

Local Hardware context for practical system design advice. Identify LabVIEW IP within project libraries and TestStand Sequences. Generate documentation and guidance across tools.

LabVIEW

Intuitive test development with improved dev-ops tools for collaboration and web controls for HTML/JavaScript integration

TestStand

Powerful automation framework with upgraded Python support, modern operator interfaces, and richer data-logging tools

InstrumentStudio

Interactive measurements with expanded hardware support, including DAQmx panel, data capture, and security upgrades

FlexLogger

Simplified bring up and datalogging with improved automation, more plug-ins, and dynamic triggers

DIAdem

Deep product insights through data visualization and exploration scaling to automated reporting

LabVIEW Roadmap

2025

2026

2027+

Test Development Operations

- HTML Diff
- Linux Docker container
- CLI improvements for Git

Onboarding & Getting Started

- NI Nigel AI for help and VI description

Product Line Operations

- Better debugging workflows
- Performance improvements to PPL

Ecosystem Integration

- Python 3.11 and 3.12
- Initial .NET 8 support
- LabVIEW Community on Mac

Security

- Secure LabVIEW development documentation

Test Development Operations

- Improvements to HTML Diff
- Windows Docker container
- **Headless LabVIEW CLI**
- Successful build without drivers in Docker

Onboarding & Getting Started

- **NI Nigel AI with code completion, project context and system context**

Product Line Operations

- Web browser control
- Multilingual support (UTF-8) for UI

Ecosystem Integration

- Localized 64-bit LabVIEW
- .NET8 (.NET Core) support in Linux

Security

- Prevent Unknown External Code from Executing

Onboarding & Getting Started

- Improved installation experience
- Better getting started experience
- Modern editor interface
- **NI Nigel AI with code generation**

Product Line Operations

- Modern engineering user interfaces
- RT and FPGA improvements
- Customer Azure cloud hosting of Nigel AI
- Nigel AI is aware of local test system in LabVIEW+

Ecosystem Integration

- Improved Python integration
- .NET 10 (.NET Core) support
- .NET 10 assembly building and controls
- Open source and improve LabVIEW gRPC

Security

- Security updates for third-party dependencies
- Global security standards

Detailed roadmaps available on ni.com



NI TestStand Roadmap

2025

2026

2027+

Ecosystem Integration

- .NET 8 support
- Python 3.14 support

Requirements Driven Automation

- Test steps from spec documents

Onboarding & Getting Started

- Nigel to learn concepts & find/change settings

Test Development Operations

- Git pane for source control

Ecosystem Integration

- Deploying sequences on Linux desktop

Requirements Driven Automation

- Nigel is context aware of sequence
- Nigel generates sequences
- Capture test metadata for analysis

Production Line Operations

- Modern user interface

Security

- Dependency updates

Ecosystem Integration

- Develop sequences on Linux desktop
- Python API for TestStand
- Sequence execution on Linux RT
- Python Anaconda support
- Remote execution - gRPC steps

Production Line Operations

- Improved user management
- Better visualization of parallel tests

Test Development Operations

- TestStand in Containers

Security

- CRA security standards

Detailed roadmaps available on ni.com



NI FlexLogger Roadmap

2025

2026

2027+

Ecosystem Integration

- Support for NI mioDAQ

Customization & Extensibility

- Public plug-ins library
- Measurement plug-ins (Python)
- PDK API reference

Test Efficiency

- Automate with TestStand
- Logging rate controls/triggers

Security

- Dependency updates

Ecosystem Integration

- Support for NI myDAQ
- Integrate with Modbus devices

Customization & Extensibility

- Custom CAN baud rates

Test Efficiency

- Output Sequencer plug-in
- Spreadsheet channel importer
- Automated events/conditions
- NI Nigel AI integration

Ecosystem Integration

- Embedded logging on cRIO

Customization & Extensibility

- In-line analysis (NVH)
- Graph/log output channels
- Static PWM control

Test Efficiency

- Automate with native sequencer

Security

- CRA security standards

Detailed roadmaps available on ni.com



NI InstrumentStudio Roadmap

2025

2026

2027+

Interactive Measurements

- Sequencing of DMM, DC power, Scope, and FGen panels
- Sweeping of measurement plug-ins
- Sweeping of DMM, DC power, Scope, and FGen panels
- Sequencing SCPI and RF panels

Onboarding and Getting Started

- Instrument panel improvements

Interactive Measurements

- NI-DAQmx PXI instruments: analog input and analog output
- Switch panel support

Onboarding and Getting Started

- NI Nigel AI integration
- NI Nigel AI insights for bring-up and debug

Test Data Management

- Context-rich data logging, query, and display

Security

- Sign all installer MSIs

Interactive Measurements

- NI-DAQmx PXI instruments: digital input/output, and counters
- More NI-DAQmx, non-PXI
- Expanded switch support and vision
- Remote panels

Onboarding and Getting Started

- Improved TestStand compatibility

Test Development Operations

- Access custom measurements using NI SystemLink

Security

- CRA security standards

Detailed roadmaps available on ni.com



NI DIAdem Roadmap

2025

2026

2027+

Interoperability

- ASAM ODS performance improvement
- Python 3.13 support
- Support for Python virtual environments
- Disable DateTime value rounding
- LabVIEW-DIAdem connectivity VIs

Interoperability

- From SystemLink, open test files in DIAdem
- Python for user-defined bar elements
- Python for scriptable user dialogs
- First-class Python support

Security

- CRA security standards

Interoperability

- Support for external libraries in Python plug-ins
- NI Nigel AI integration

Detailed roadmaps available on ni.com



NI VeriStand Roadmap

2025

2026

2027+

Ecosystem Integration

- Model Generation Support improvements

Test Efficiency

- First release of TestStand steps integration
- Improved VeriStand execution debug experience

Security

- Windows FIPS Support

Customization & Extensibility

- Updated plug-in development and debug experience

Test Efficiency

- Support for high channel count DUTs
- Additional TestStand steps features
- Python API completion

Onboarding & Getting Started

- First Nigel AI features targeted for new users

Ecosystem Integration

- Linux desktop support for Deployment Environments
- Simulation Model Improvements

Test Efficiency

- Expanded SystemLink Data Integration

Security

- Full CRA Compliance

Onboarding & Getting Started

- Nigel AI features for system and test configuration setup.

Detailed roadmaps available on ni.com



NI SystemLink Roadmap

2025

2026

2027+

Platform

- S2 KMS Server side encryption
- Update to Grafana 11

Systems Management

- Define virtual and unmanaged systems
- Tag alarms and notifications
- Asset utilization tracking

Product Insights

- Multi-part file upload (large file support)
- View csv, text and native browser-supported files
- Dashboards support for products, test results, and data table queries

Test Plan Management

- Automated test planning scheduling infrastructure

Platform

- **NI Nigel AI integration**
- Additional sizes & deployment options
- Modern UI & dashboards

Systems Management

- **Location management & QR codes**
- Tag performance improvements

Product Insights

- Filter data tables & improve data table ingestion
- Trigger analysis on test result events
- TDMS data viewer

Specification Compliance

- Create, edit, & visualize spec limits
- Create & edit spec conditions

Test Plan Management

- Trigger analysis based on test plans
- Schedule calibration & maintenance
- Templates for work orders
- Notifications for test plan changes

Platform

- CRA security standards
- Authentication for desktop apps

Systems Management

- OOTB asset utilization dashboards

Product Insights

- Additional measurement file types
- Search for files based on test metadata

Specification Compliance

- Map specs to measurements / channel data
- Product spec compliance & coverage
- Spec compliance per condition combination

Test Plan Management

- UI for managing work item templates

Detailed roadmaps available on ni.com

OUR CORE DIFFERENTIATION

The NI platform is purpose built to help engineers adapt to new challenges using the latest technologies.

Box Instruments

(Closed Systems)

“Vendor Knows Best”

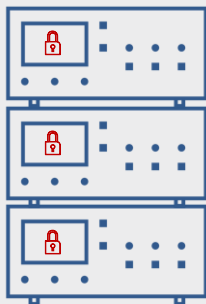
Fixed functionality

Large “rack & stack” boxes

Sacrifices speed for accuracy

Difficult to automate

Tough to integrate



NI Platform

“Customer Knows Best”

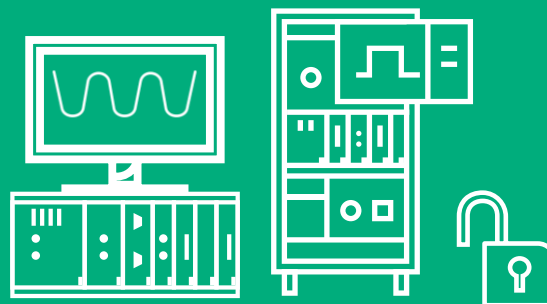
Modular, customizable & open to extend

Small size / weight / power

Fast test & engineering grade accuracy

Native automation, data & analytics

Open, vibrant ecosystem & fast innovation



Traditional Test Systems

(Fully Custom System)

“Purpose-Built”

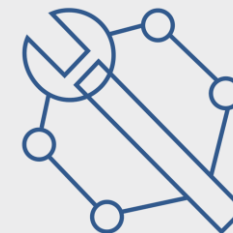
Narrowly defined options

Large “Big-Iron” footprint

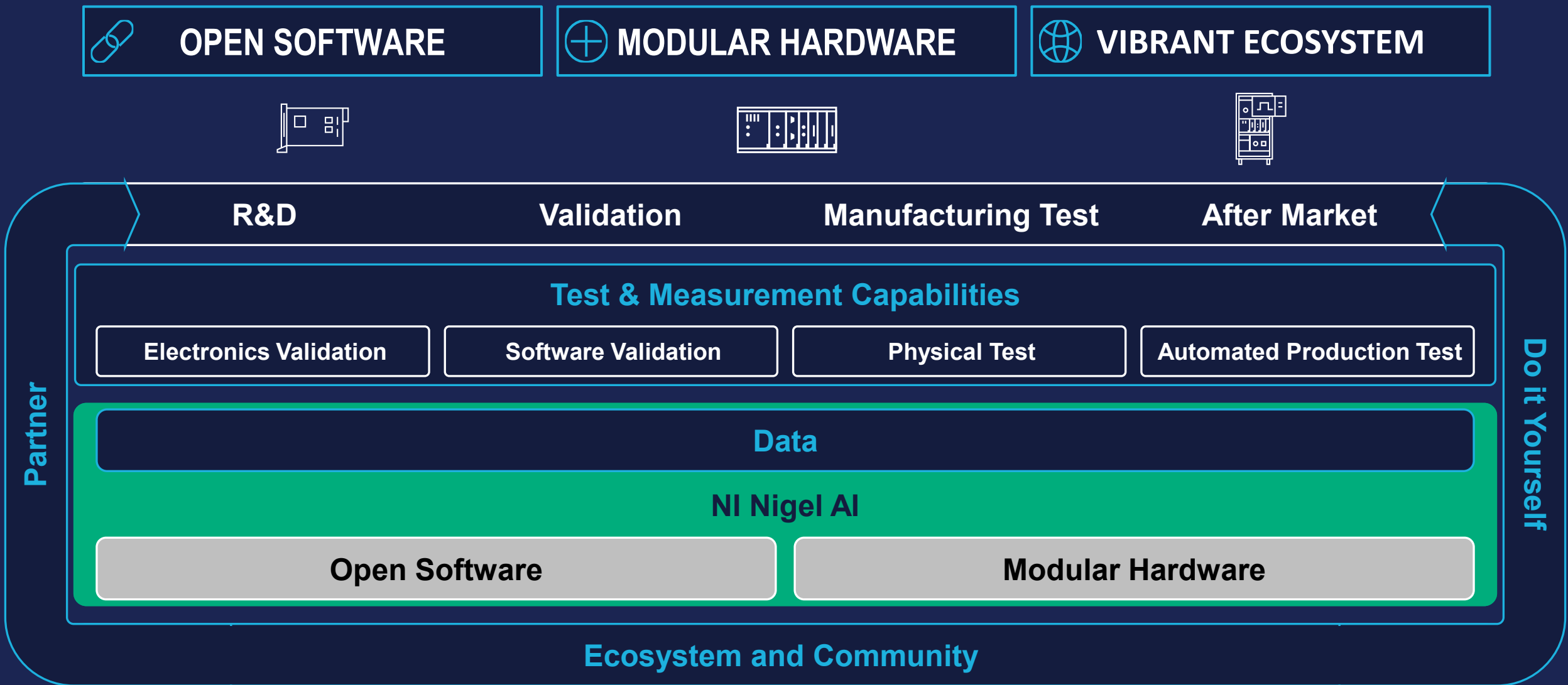
Sacrifices accuracy for speed

Limited data & analysis

Slow adoption of new technology



NI Integrated Platform-Based Approach



NI Integrated Platform-Based Approach

R&D

Validation

Manufacturing Test

After Market

Test & Measurement Capabilities

Electronics Validation

Software Validation

Physical Test

Automated Production Test

Data

NI Nigel AI

Open Software



Modular Hardware



Data Acquisition

Instrumentation

Test & Measurement

Real-Time & FPGA Control

Software-defined Radio

19-inch Racks

Ecosystem and Community

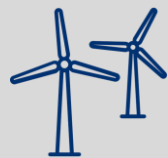
Partner

Do it Yourself



DAQ is BACK

Measuring Physical Phenomena at the Edge



Convergence of physical and electrical systems drive new requirements in DAQ & embedded control systems



NI FieldDAQ



Multi-Function DAQ



NI CompactRIO



NI CompactDAQ



PXI DAQ

NI is refreshing our portfolio of DAQ and embedded control products to address a wide range of price/performance and ruggedness requirements.

Simplify and Scale with a Single Driver



Choose the SW that's right for you!

NI-DAQmx Driver (free download)

Upgrade or expand your HW when needed





±10 V



Thermocouple



IEPE
(Accel and mic)



Bridge
(Strain, load, pressure)

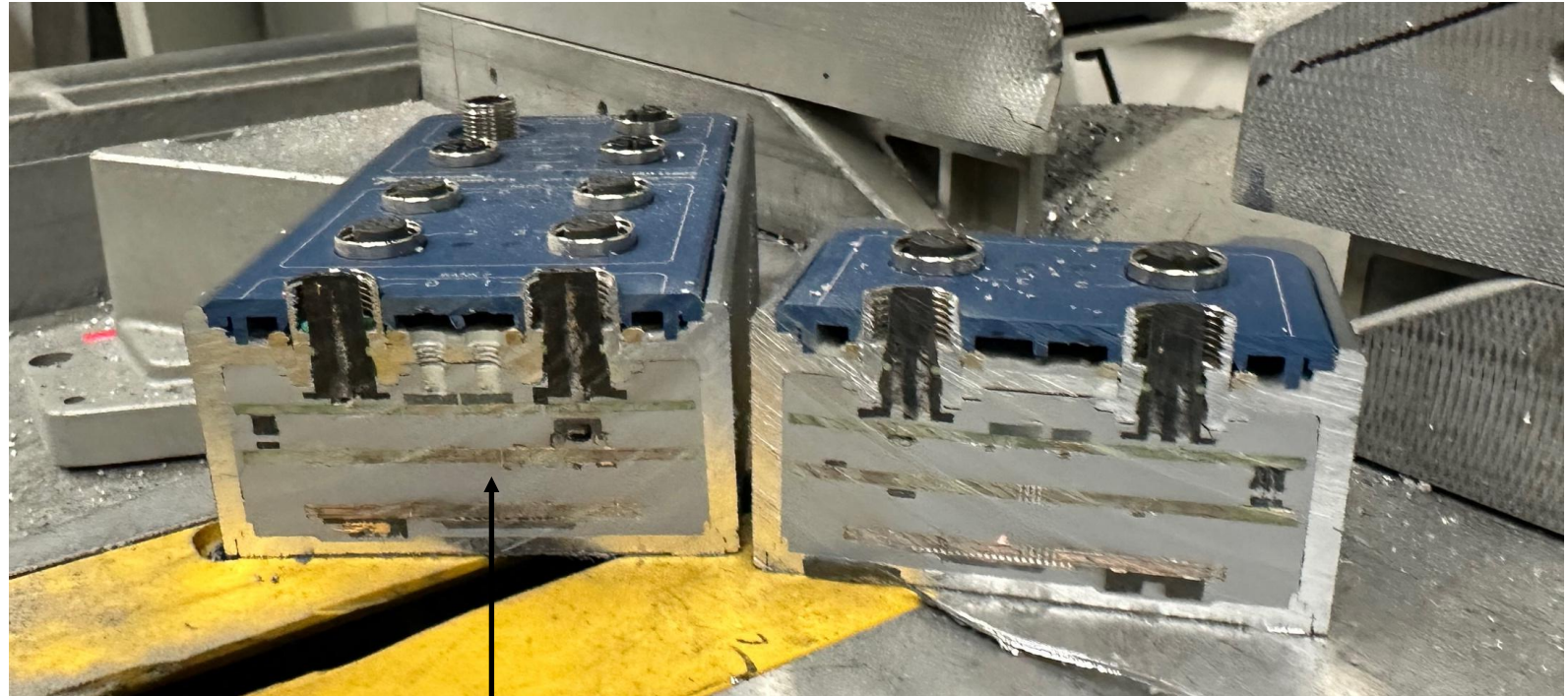
FieldDAQ

IP67-rated DAQ

- -40 °C to 85 °C operating temp
- 100 g / 10 g_{rms} operating shock/vib
- Ethernet comm with built-in switch and synchronization
- IP65/67 (1m submersible for 30 min)
- Standard M12 connectors
- 24-bit @ 102.4 kS/s/ch (85 S/s/ch for TC)
- Ch-Ch isolation (60 VDC working)



A peek Inside FieldDAQ



Field DAQ's "potting" material fills all voids in the enclosure – contributing to some of the industry's best temperature operating range, isolation, and shock resistance.

New Modules

16-ch Multiplexed

NI 9204



- 16-ch SE, 8-ch DI
- Input Range (Volts): ± 0.2 , ± 1 , ± 5 , ± 10
- 16-bit
- 250 kS/s (max single channel rate)
- Spring terminal or DSUB
- 6.2 mV absolute accuracy (10V range, 2-year calibration interval)

16-ch Simultaneous

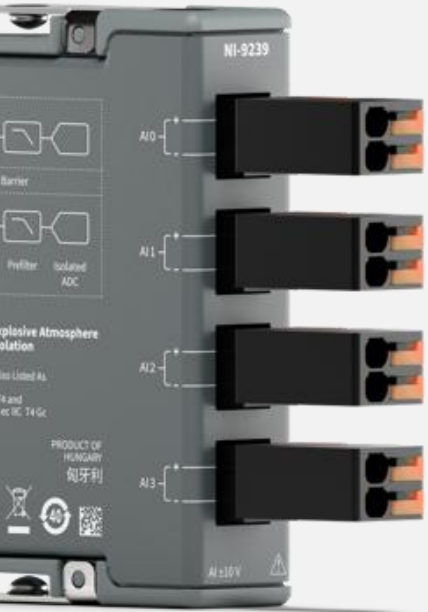
NI 9320



- 16-ch DI
- Input Range (Volts): ± 10
- 16-bit
- 200 kS/s/channel (ADC per channel)
- Spring terminal
- DSUB

CompactDAQ Updates

Snap in Connectors



No tool required
Lowest priced

Available on 10 Models

- NI 9223 (10V, 1MS)
- NI 9222 (10V, 500k)
- NI 9227 (5A rms)
- NI 9225 (300V)
- NI 9238 (0.5 V, 50k, 24-b)
- NI 9239 (10 V, 50k, 24-b)
- NI 9229 (60 V, 50k, 24-b)
- NI 9230/32 (IEPE)
- NI 9269 (10V output)

USB-C Chassis

Modern cable
Lower price

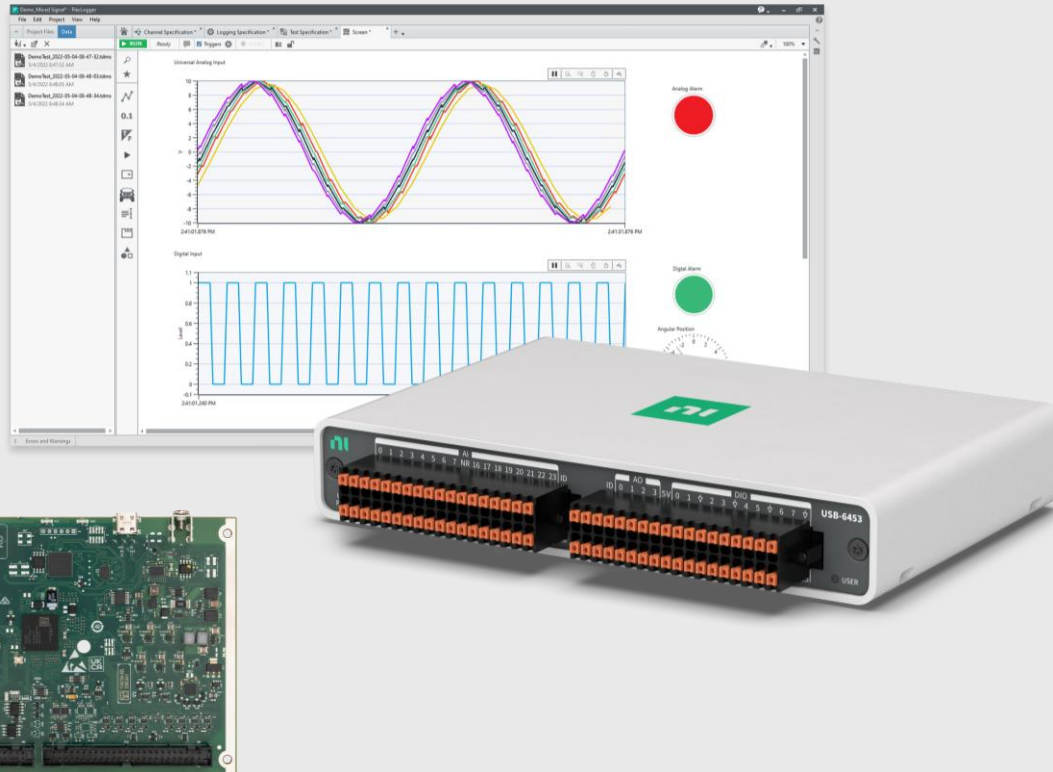
3 Chassis

- 1-slot
- 4-slot
- 8-slot



NI mioDAQ

NI's latest USB DAQ Hardware – Available as Both Enclosed and OEM Versions



- **Better Measurements**

- Up to 20-bit, ± 10 V inputs @ 1 MS/s/ch sample rate
- Four ± 10 V outputs @ 250 ks/s/ch update rate
- 16 digital lines and four counter/timers

- **Better Setup Experience**

- Bus-powered USB Type-C connection
- Connection accessories included
- Multiple mounting accessories

- **Better Software Options**

- Free DAQ software with FlexLogger Lite
- Industry-best LabVIEW integration
- Support for Python, C/C++, C# and more
- **NEW** - Linux Support

*Board-only (OEM) version available
with IDC/ribbon cable I/O pins.*

New Multifunction DAQ Hardware

16 Options For PCIe and PXIe

- Cost-optimize your test systems with lower cost devices
- New – Lowest priced DAQ device for PXIe
- New – Lowest cost/channel DAQ device for PXIe
- First 18-bit PXIe Multifunction DAQ device
- 208-ch Multifunction DAQ for PCIe

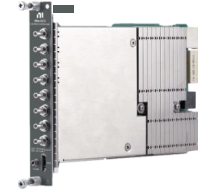


NEW PCI Express Multifunction I/O Devices

Category	Model	Part Number	16-bit A/I Channels (DI/SE)	Sample Rate	DIO Channels	A/O	A/O Update Rate	Counters	A/I Absolute Accuracy
Lowest Cost	PCle-6320	781043-01	8/16	250 kS/s	24	0	--	4	2,200 μ V
	PCle-6321	781044-01	8/16	250 kS/s	24	2	900 kS/s	4	2,200 μ V
	PCle-6323	781045-01	16/32	250 kS/s	48	4	900 kS/s	4	2,200 μ V
	PCle-6340	790586-01	8/16	500 kS/s	24	0	--	4	2,190 μ V
	PCle-6341	781046-01	8/16	500 kS/s	24	2	900 kS/s	4	2,190 μ V
	PCle-6342	790587-01	16/32	500 kS/s	48	0	--	4	2,190 μ V
	PCle-6343	781047-01	16/32	500 kS/s	48	4	900 kS/s	4	2,190 μ V
Highest Speed	PCle-6350	790588-01	8/16	1 MS/s	24	0	--	4	1,520 μ V
	PCle-6351	781048-01	8/16	1.25 MS/s	24	2	2.86 MS/s	4	1,520 μ V
	PCle-6352	790589-01	16/32	1 MS/s	48	0	--	4	1,520 μ V
	PCle-6363	781051-01	16/32	2 MS/s (1-ch) 500 kS/s (all)	48	4	2.86 MS/s	4	1,660 μ V
Highest Channel Density	PCle-6345	790686-01	40/80	500 kS/s	24	2	2.86 MS/s	4	1,520 μ V
	PCle-6347	790691-01	104/208	500 kS/s	24	2	2.86 MS/s	4	1,520 μ V
	PCle-6355	790687-01	40/80	1.25 MS/s	24	2	2.86 MS/s	4	1,520 μ V
	PCle-6357	790688-01	104/208	1.25 MS/s	24	2	2.86 MS/s	4	1,520 μ V

Sep 2025
Dec 2025

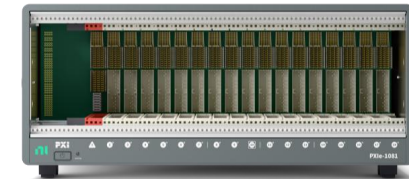
Improving PXI Platform Accessibility with Entry-Level Options



PXI Oscilloscope



PXI DAQ



PXI Chassis



PXI Controller

New Products at Wide Range of
Price & Performance

PXI Express Multifunction I/O Devices (Multiplexed)

Category	Model	Part Number	A/I Resolution (bits)	A/I Channels (DI/SE)	Sample Rate	DIO Channels	A/O	A/O Update Rate	Counters	A/I Absolute Accuracy
Lowest Cost	PXIe-6321	790590-01	16	8/16	250 kS/s	24	2	900 kS/s	4	2,200 µV
	PXIe-6323	790591-01	16	16/32	250 kS/s	48	4	900 kS/s	4	2,200 µV
	PXIe-6341	781052-01	16	8/16	500 kS/s	24	2	900 kS/s	4	2,190 µV
	PXIe-6343	790592-01	16	16/32	500 kS/s	48	4	900 kS/s	4	2,190 µV
	PXIe-6345	783631-01	16	40/80	500 kS/s	24	2	2.86 MS/s	4	1,520 µV
Highest Speed	PXIe-6351	790593-01	16	8/16	1.25 MS/s	24	2	2.86 MS/s	4	1,660 µV
	PXIe-6353	790594-01	16	16/32	1.25 MS/s	48	4	2.86 MS/s	4	1,660 µV
	PXIe-6361	781055-01	16	8/16	2.0 MS/s	24	2	2.86 MS/s	4	1,660 µV
	PXIe-6363	781056-01	16	16/32	2.0 MS/s	48	4	2.86 MS/s	4	1,660 µV
	PXIe-6375	783634-01	16	104/208	3.8 MS/s	24	2	2.86 MS/s	4	1,660 µV
Highest Channel Density	PXIe-6365	783633-01	16	72/144	2.0 MS/s	24	2	2.86 MS/s	4	1,520 µV
	PXIe-6355	783632-01	16	40/80	1.25 MS/s	24	2	2.86 MS/s	4	1,520 µV
	PXIe-6357	790595-01	16	104/208	1.25 MS/s	24	2	2.86 MS/s	4	1,660 µV
Best Resolution	PXIe-6381	790689-01	18	16	625 kS/s	24	2	2.86 MS/s	4	980 µV
	PXIe-6383	790690-01	18	32	625 kS/s	48	4	2.86 MS/s	4	980 µV

Sep 2025

Dec 2025

2 New PXIe Multifunction DAQ Devices



- 18-bit analog input resolution
- Better accuracy down to 980 μ V
- Built-in selectable 40 kHz filter
- Lower prices
- 4 advanced counters & timers

Technical Specifications

Parameters	PXIe-6381	PXIe-6383
AI Resolution Bits	18	
Max Channel Sample Rate	625 kS/s	
AI Channels	16	32
AO Channels	2	4
DIO Channels	24	48
Input Voltage Range	± 0.1 V, ± 0.2 V, ± 0.5 V, ± 1 V, ± 2 V, ± 5 V, ± 10 V	

Software Support

Parameters	Details
APIs	LabVIEW, Python, C/C++
Compatible Software	LabVIEW, FlexLogger Lite (free download)
Driver	NI-DAQmx

NI PXIe-1081 Chassis

New 18-slot PXI Express Chassis for Cost-Effective, Low-Bandwidth Automated Test Applications with PXI

Highlights

- 17 Hybrid Slots
- Slot Cooling capacity: 58 W
- Maximum System Bandwidth: 2 GB/s
- Gen 1 PCIe Bandwidth: 250 MB/s
- High-Channel Count System: Consolidates multiple modules into a compact footprint —ideal for large-scale, parallel test applications.
- Optimized for Data Acquisition applications and instruments with low-throughput requirements such as DMMs, SMUs, and switch modules.

Built on the NI PXI Advantage: Seamless software ecosystem integration, the latest embedded controllers, industry-leading timing and synchronization, and the broadest portfolio of instrumentation and I/O.



New PXI Embedded Controller Options

11 new variants* of the PXIe-8842 and PXIe-8862 embedded controllers for cost-effective high-performance processing

Highlights

- **Operating System:** Windows 10 LTSC (64-bit), Windows 11 LTSC, or LabVIEW Real-Time (NI Linux Real-Time).
- **Security:** Integrated with latest hardware-based security, TPM 2.0, which includes secure boot and device encryption.

PXIe-8842

- **Maximum Controller Bandwidth:** 8 GB/s
- **Hard Drive Size:** 512 GB
- **CPU:** 11th Gen Intel® Core™ i5-11500HE, 6 Core

PXIe-8862

- **Maximum Controller Bandwidth:** 16 GB/s
- **Hard Drive Size:** 512 GB (standard), 960 GB with Removable Drive (option)
- **CPU:** 11th Gen Intel® Core™ i7-11850HE, 8 Core



PXIe-8842, PXIe-8862, and PXIe-8862 with removable drive

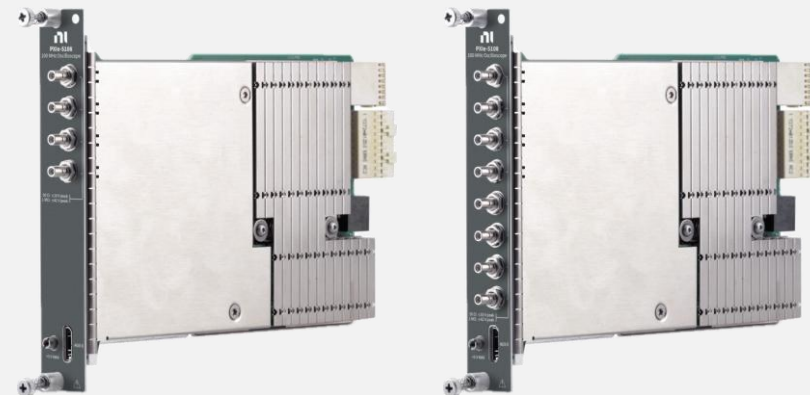
*New embedded controllers do not include a native GPIB port

NI PXIe-5108 Oscilloscope

New 4 and 8 Channel, 100 MHz Bandwidth, 14-bit Oscilloscopes for Cost-Effective Entry into Automated Test Applications with PXI

Highlights

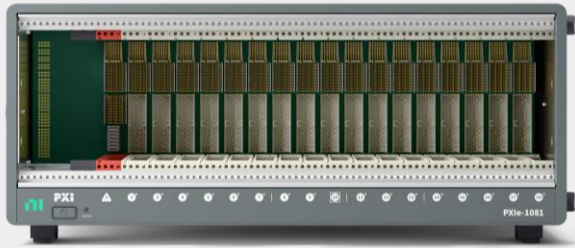
- **Bandwidth:** 100 MHz
- **Sample Rate:** 250 MS/s
- **Resolution:** 14-bit
- **Input Impedance:** 50 Ω , 1 M Ω
- **Input Range:** 1 M Ω path: ± 40 V; 50 Ω path: ± 5 V
- **Synchronized Multi-Instrument Sessions:** Simplifies software programming and the routing of trigger and clock signals, allowing multiple modules behave as a single oscilloscope with “n” channels.
- **Multi-Record Fetch:** Capture up to 500k¹ waveforms per second (each with 256 samples) to catch elusive anomalies and glitches.
- **High-Density:** Maximizes channel count within a minimal footprint, ideal for high-channel-count applications.
- Covers a wide range of applications, from research to automated validation to high-volume production test.



PXIe-5108 4-channel and 8-channel Oscilloscope
Options Available

NI PXI Performance Within Reach

Timing & Synchronization



PXIe-1081

18-slot All Hybrid Chassis

Price: \$7.5K USD / €6.8K Euro / ¥40K JPY*

Powerful Computer

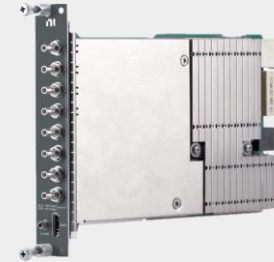


PXIe-8842 / PXIe-8862

High-Performance Embedded Controller

Price: Starting at \$5.2K USD / €5K Euro / ¥30K JPY*

Modular Instrumentation



PXIe-5108

High Density Oscilloscope

Price: Starting at \$7.5K USD / €7.2K Euro / ¥1M JPY*



PXIe-6381 / PXIe-6383

Multifunction DAQ

Price: Starting at \$3.4K USD / €3.3K Euro / ¥473K JPY*

Software



InstrumentStudio

Analog Input in PXI DAQmx Modules

Available for Free download: Feb 4th

**Latest pricing is available at ni.com (information retrieved January 21, 2026)*

Commercial Innovation is Driving T&M

Commercial Innovations



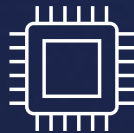
AI Agents &
LLMs



6G & RADAR



Cloud & Data
Centers



GPU & NPU



Measurement Innovations

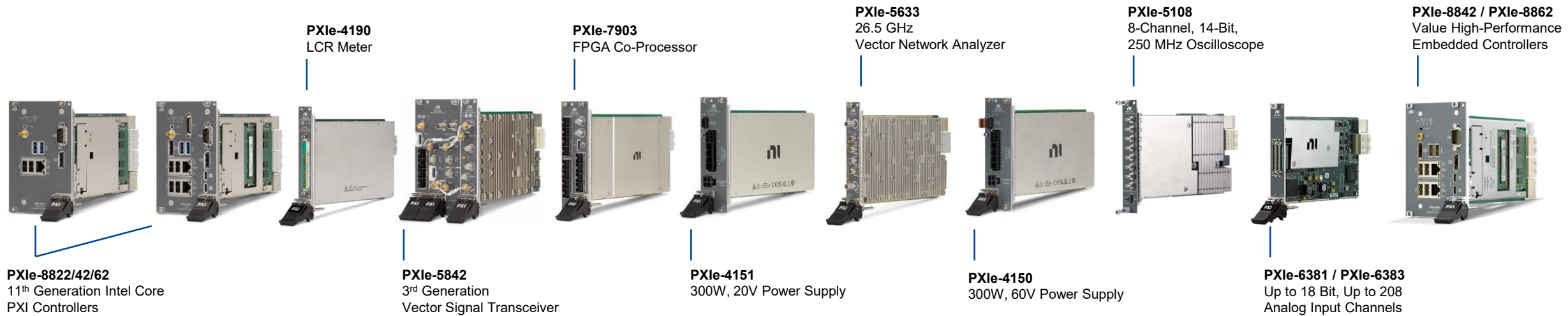
**High-Density Precision
DC Measurements**

Wideband RF Performance

Physical Measurements at the Edge

**Low-Code and No-Code
Test & Measurement Automation**

Continuous Investment in PXI & Modular Instruments



2022

2026



NI PXIe-8520

New high-performance Automotive Ethernet architecture to test the next generation of ECUs



Gigabit Ethernet Option

4 x 100/1000M BASE-T1 ports

Adds MACsec support + TC10 at 1G

XNET parity targeted for Q2 CY 2026

RELEASED

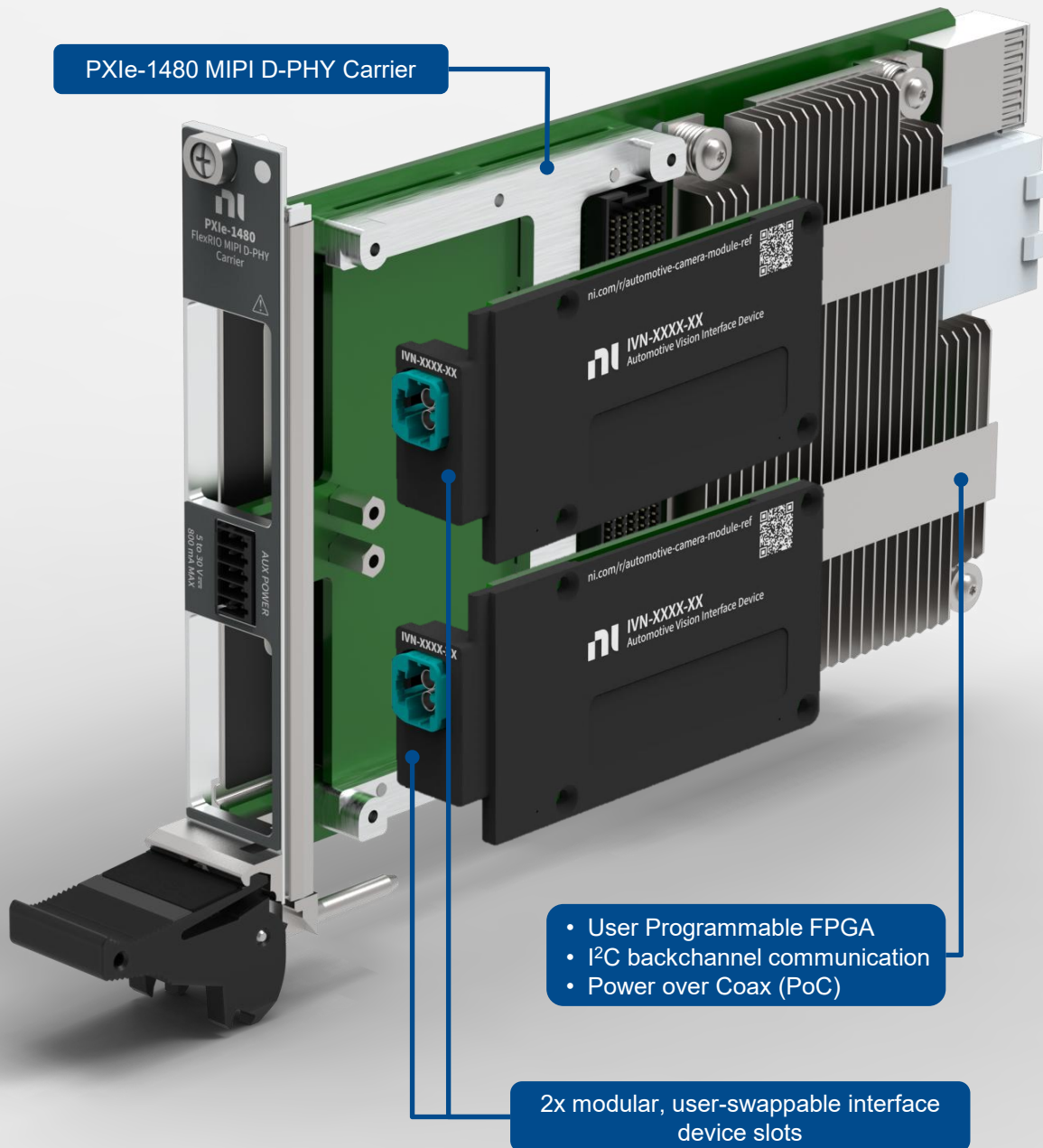
Multi Gigabit Ethernet Option

4 x 2.5/5/10G BASE-T1 ports

MACsec + TC10

XNET, VCOM support

Coming
Soon



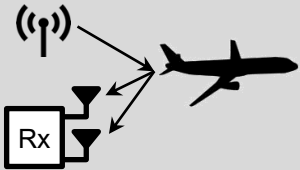
NI PXIe-1480 and Interface Devices (IVN-1481x)

New interfaces for automotive camera & display testing

What's New

- **13x new user-swappable interface devices**
- **Ultimate Flexibility:** The PXIe-1480 features two user-swappable slots that support any combination of the new 13x interface devices.
- **2x Channel Density:** Up to 8 channels per PXIe slot
- **New ADAS Protocol Support:** Added support for MIPI A-PHY and ASA-ML protocols used in ADAS cameras and ECUs
- **Automotive Display Support:** Added support for testing Automotive displays, digital instrument clusters, and Infotainment ECU links with GMSL2, GMSL3 or FPD-Link IV protocols
- **Increased Performance:** I²C backchannel communication up to 100MHz, GPIO up to 200MHz, and 8GB of DRAM.

Radar Prototyping



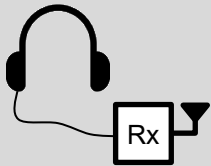
Target Emulation



Non-Terrestrial Networks



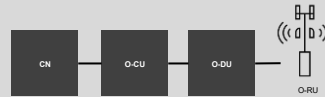
Signal Intelligence



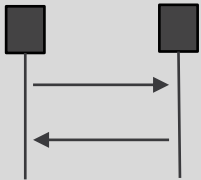
Spectrum Monitoring



Open RAN



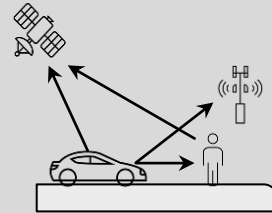
6G Design



AI for Wireless



Sensing & Communications



RF & Wireless

Next Generation Wireless & Electronic Warfare Systems Require Advancements in RF Test & Software Defined Radio

NI's Continuous Investment in RF



PXIe-5842
3rd Generation
Vector Signal Transceiver



PXIe-5633
26.5 GHz
Vector Network Analyzer



PXIe-5842 + PXIe-5633
VST + VNA
Pass through mode



PXIe-5842
54 GHz frequency
extenders



PXIe-5842
3rd Generation VST
4 GHz bandwidth extension



PXIe-5860
2 channel high density
Vector Signal Transceiver

2022

2025



NI Ettus USRP X410
400 MHz BW
7.2 GHz Fc



NI Ettus USRP X440
1.6 GHz BW
4 GHz Fc

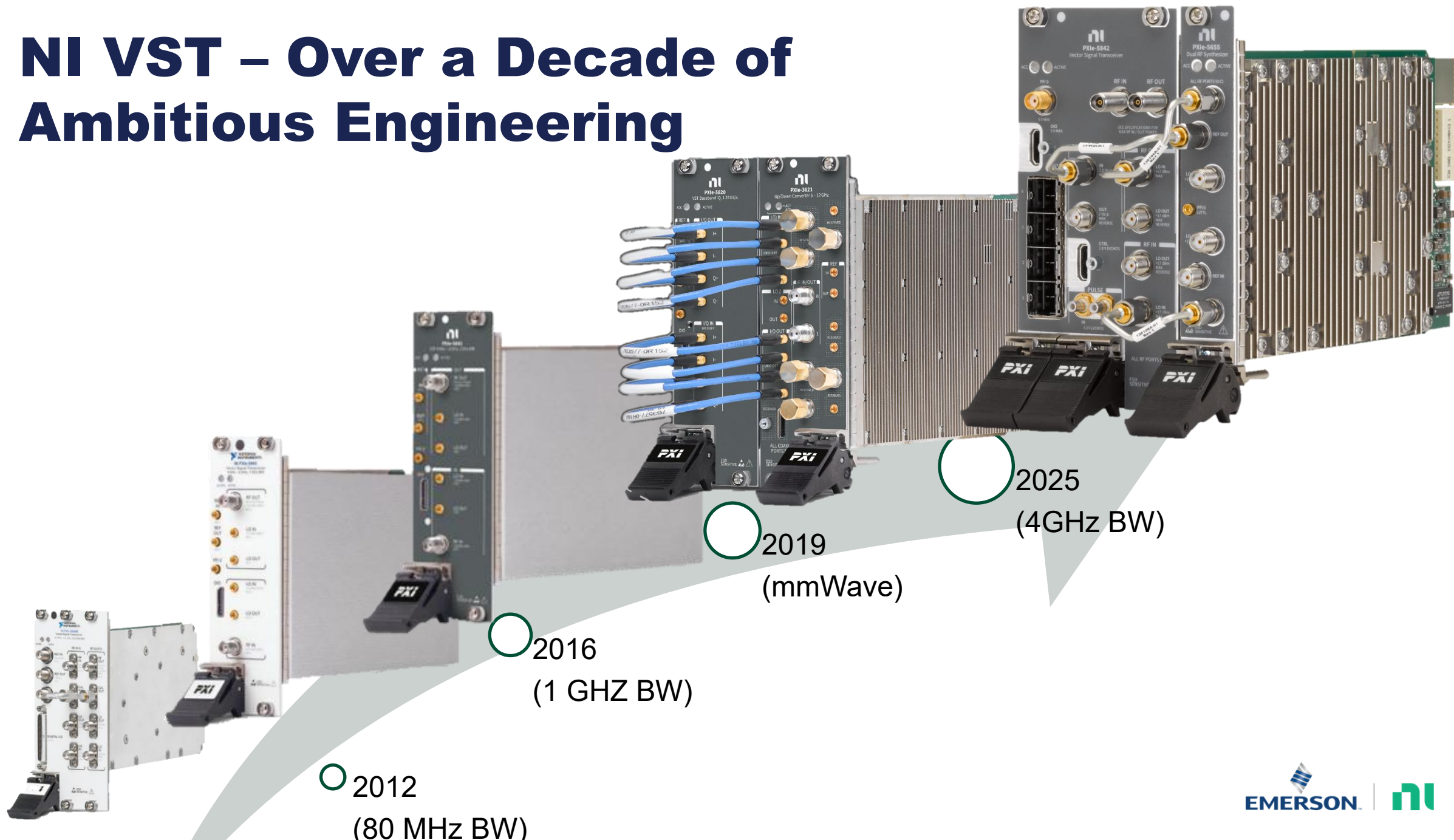


NI Ettus USRP B206mini
10 MHz - 6 GHz
Low-cost USB-C

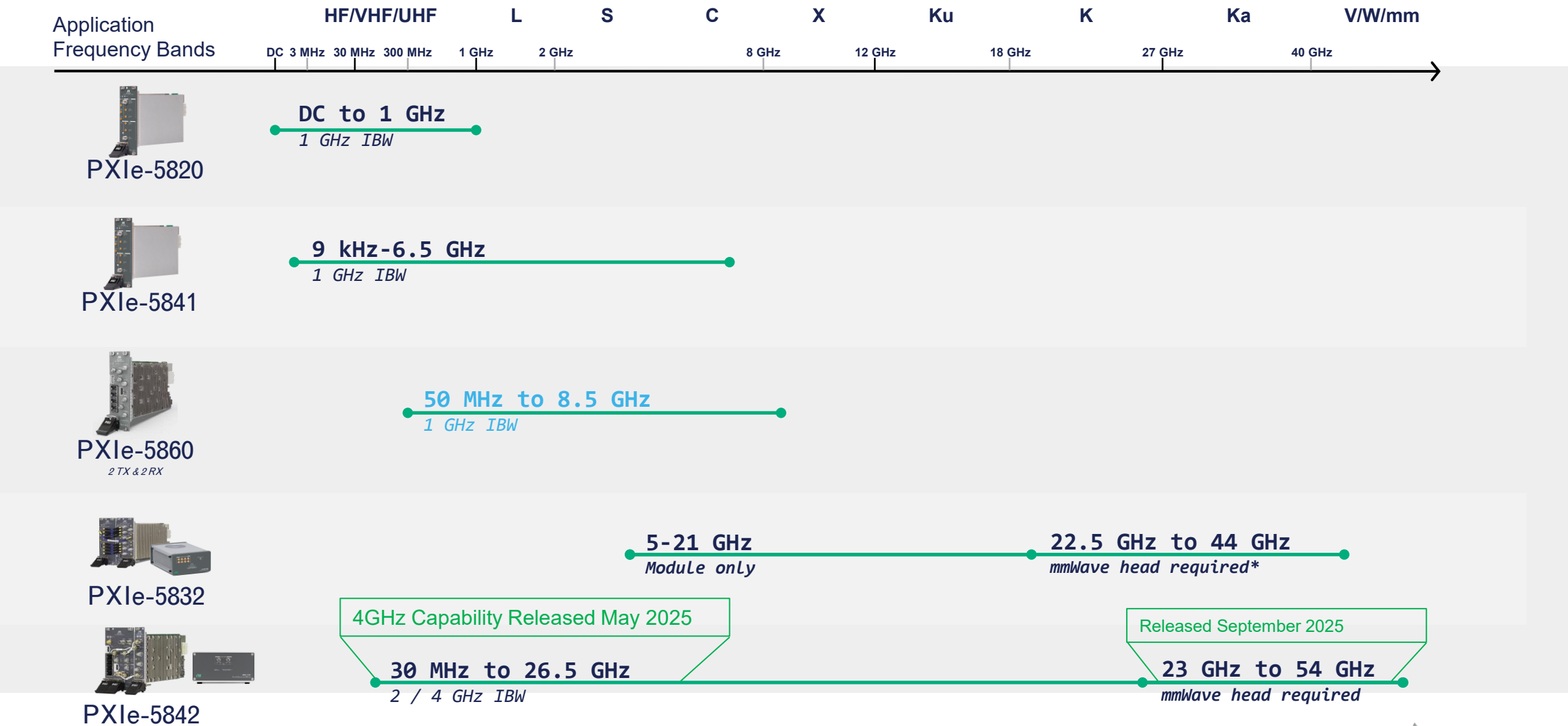


OBX daughterboard
10 Mz - 8.4 GHz
For USRP X3xx

NI VST – Over a Decade of Ambitious Engineering



Vector Signal Transceiver Family



RFmx Products

RFmx Product
[Personlity]

RFmx Bundle

General Purpose

RFmx General Purpose Bundle

Spectrum Analysis [SpecAn]	Noise Figure [SpecAn]	Phase Noise [SpecAn]
Analog Modulation [Demod]	Digital Modulation [Demod]	

Cellular

RFmx Cellular Bundle

NR	LTE/LTE-Advanced [LTE]	LTE-V2X [LTE]
W-CDMA/HSPA+	NB-IoT/eMTC [LTE]	EV-DO
CDMA2000	TD-SCDMA	GSM/EDGE+

Connectivity

RFmx Connectivity Bundle

WLAN 802.11 a/b/g/j/p/n [WLAN]	WLAN 802.11 a/b/g/j/p/n/ac [WLAN]	WLAN 802.11 a/b/g/j/p/n/ac/ax [WLAN]
WLAN MIMO [WLAN]	WLAN 802.11 a/b/g/j/p/n/ac/ax/be [WLAN]	WLAN 802.11 a/b/g/j/p/n/ac/ax/be/bn [WLAN]
Bluetooth		

Power Amplifier [SpecAn]	Pulse	VNA	Analysis Only Mode
-----------------------------	-------	-----	--------------------

NI PXIe-5842 Vector Signal Transceiver

High-Performance RF Signal Analyzer and RF Signal Generator

Highlights

- **Flexible Hardware Options:** Choose from 8, 12, 18, 26.5 or 54 GHz, frequency, 500 MHz, 1, 2, 4 GHz bandwidth options and TRx capabilities
- **Expanded Functionality:** Add the PXIe-5633 VNA for modulated and s-parameter measurements from one port
- **MIMO Expandable:** Add up to 4 VSTs in a single chassis for a phase coherent 4x4 MIMO system
- **Real-Time, Sustained Data Streaming:** Use MGT connectors for full rate data streaming up to 4 GHz bandwidth
- Covers a wide range of applications, from research to automated validation to high-volume production test.



PXIe-5842 VST
NEW: 4 GHz Bandwidth



NEW: Upgradeable 54 GHz Frequency Extension

- Pairs with 26.5 GHz VST
- 2 GHz Bandwidth
- Improved calibration support

Now
Orderable

NI PXIe-5860 Multi-Channel Vector Signal Transceiver

50 MHz to 8.5 GHz VST with 2 VSAs and 2 VSGs

What's New

- **Warranted Specifications:** Includes options for accredited calibration
- **Software Feature Completion:** Support for RFmx List Mode, T-Clk, and MGT streaming
- **Expanded Functionality:** Integration with PXIe-5633 VNA pass-through
- **New Hardware Options:** 1-channel configuration at a competitive price point.(\$80k - \$100k)
- **WLAN MIMO:** Leveraging channel density for cost effective MIMO configurations
- Optimized for high-density production test applications, with new features expanding its use cases into automated validation and low-cost RF test



PXIe-5860 VST

Now
Orderable

NI PXIe-5633 Vector Network Analyzer

26.5 GHz S-Parameter Add-on or Stand-Alone VNA

Highlights

- **Stand-Alone VNA:** Use as a fully independent 2-port VNA
- **Combined 3-in-1 Instrument:** Use as a VST 'add-on', enabling s-parameter and modulated measurements from the same port (PXIe-5842 and PXIe-5860 VSTs)
- **Flexible Hardware Options:** Choose from 8,12,18, or 26.5 GHz frequency range options
- **Full Calibration Support:** Automatic calibration with CAL-5501 Vector Calibration Module



PXIe-5633 VNA



CAL-5501
Vector Calibration Module

Now
Constantly
Orderable

NI PXIe-8290 Data Movement Device

Expands PXI system throughput for high-bandwidth systems.

Highlights

- Enables data streaming from highest bandwidth PXI instruments (e.g. VST or FlexRIO HSS) and FPGA-based DUTs to 3rd party RAID servers
- User-programmable AMD Versal FPGA supports custom high-speed serial protocols and data aggregation
- Up to 32 Gbps through front-panel multi-gigabit transceiver ports
 - Supports full bandwidth (4 GHz) peer-to-peer streaming using NI VST for in-line processing or record-and-playback applications
 - Uses RDMA over 100GbE for data movement to data servers

PXIe-8290 to VST
(over High Speed Serial)

PXIe-8290 to RAID Server
(over 100GbE)

Raid
Server



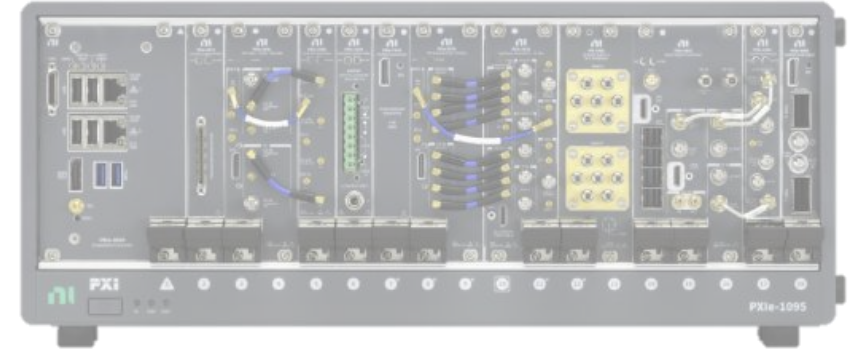
Expands PXI system throughput
by an order of magnitude

Two Platforms for RF & Wireless



Software Defined Radio (SDR) for Prototyping & Embedded Applications

- Open-Source Software Compatible
- Integration of RF with baseband and digital
- Software migration path to OEM hardware



PXI for High Performance Test & Advanced Prototyping Applications

- Instrument-grade signal sources, analyzers, and switches
- Higher frequency and bandwidth option
- Advanced Applications including 5G Test, Radar / EW Test, Communication Nav Test

NI Ettus USRP X420

New high end USRP with frequency coverage up to 20 GHz

Highlights

- Frequency Range: **10 MHz – 20 GHz**
- Bandwidth: Up to **1 GHz / channel**
- Number Channels: 2 (TX/RX or TRX)
- **Phase Coherency: < 1 deg RMS (shared LO)**
- TX Output Power: Up to 15 dBm
- 5G NR RX EVM: < -35 dB @ 7 GHz
- Synchronization: LO, 10 MHz / PPS, GPSDO
- Based on X400 motherboard → same FPGA and digital I/O as X410

- **Announcing at NI Days Munich – Feb 24th**
- **Orderable Today!**
- **Shipping Early May**



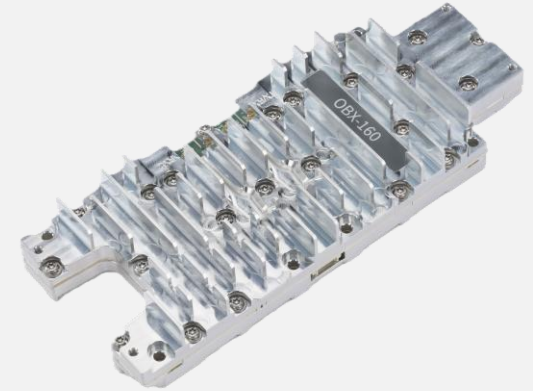
X420 uses the X400 motherboard and mechanicals

OBX Daughterboard

New RF daughterboard for the USRP X3xx series motherboard with extended frequency coverage

Highlights

- Frequency coverage from **10 MHz to 8.4 GHz** for emerging wireless research and satcom applications
- Ideal for applications spanning common bands of interest such as **HF, VHF, cellular, radar, and Wi-Fi**
- Leverage existing investments in the **USRP X300 series** motherboards
- The **open-source UHD driver** lets you choose the software that works best for you



Install up to 2 OBX daughterboards in an X300 or X310 motherboard

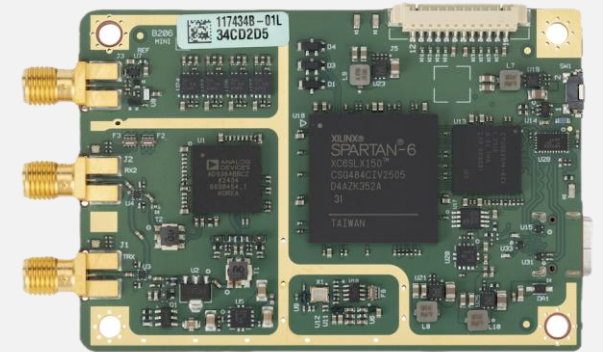
Concept

NI Ettus USRP B206mini-i

New low-cost 1 T/RX channel, 56 MHz Bandwidth, USB-C based USRP

Highlights

- Connect to a laptop easily with a **Type C USB connector**
- Available **with or without an enclosure**, ideal when optimizing for size and weight is critical
- The **open-source UHD driver** lets you choose the software that works best for you
- Flexible RF front end for applications **up to 6 GHz**
- Operate in challenging conditions with **industrial temperature support**



B206mini can be purchased with or without an enclosure

NI Ettus USRP B310

350 MHz to 7.2 GHz, 100 MHz Bandwidth, 2 Transmit and 2 Receive Channels, USRP Software Defined Radio Device

Highlights

- Connect to a PC easily with a **Type C USB connector** or **PCIe OEM option**
- Available **with or without an enclosure**, ideal when optimizing for size and weight is critical
- The **open-source UHD driver** lets you choose the software that works best for you
- Flexible RF front end for applications **up to 7.2 GHz**
- Operate in challenging conditions with **industrial temperature support**



Next Generation CompactRIO

New controllers with increased performance and features to support new trends



**Next Gen
cRIO-904x**

>>

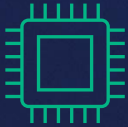


**Next Gen
cRIO-905x**

>>



**Next Gen
sbRIO**



Performance

More powerful CPUs, GPUs, and FPGAs to support more demanding applications



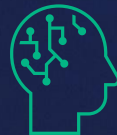
Ease of Use

Workflow improvements from getting started to deployment to simplify development



Security

TPM on all models and SW improvements to support multiple regulations



AI / Embedded Intelligence

Support and guidance to run AI models on and off CompactRIO



Optimize for Compatibility

Maintain form factor and SW paradigms as best as possible to simplify migration

cRIO-9048 w/TPM 2.0

Announcing a variant of the cRIO-9048 controller with TPM 2.0!

What is the cRIO-9048 Controller?

- The cRIO-9048 is an 8 slot CompactRIO controller and chassis combo running Linux Real-Time that offers a 1.30 GHz dual core CPU, Kintex-7 160T FPGA, 8GB of storage, and 2GB DRAM.

What is TPM 2.0?

- TPM 2.0 (Trusted Platform Module) is a specialized security chip designed to protect devices at the hardware level.
- It ensures a device boots from a trusted hardware and software source.
- It provides a secure environment for storing cryptographic keys, certificates, and sensitive data, enabling functions like secure boot, disk encryption, and attestation.

When will Standard TPM 2.0 be available for cRIO?

- A variant of the cRIO-9048 will offer standard TPM 2.0 in late 2026. This is the first step in eventually offering it on next generation cRIO controllers.

TPM Programming Guide: Coming soon to ni.com!



What can TPM do?

- Store encryption keys
- Enable secure boot
- Enable network authentication

Model	Processor	FPGA	Temp Range	Slots	Part Number (Variant)
cRIO-9048	1.30 GHz Dual Core Intel Atom	Kintex-7 160T	-40C to 70C	8	785619-01 (Standard) 785619-02 (Conformal Coated) 785619-03 (TPM 2.0)

NI's Vision for Academic

Mission Statement:

Empowering scientific and engineering exploration with adaptable tools that accelerate discovery, foster talent, and meet the demands of the modern laboratory



Enhance Student Retention
& Engagement through
Integration of Modern NI
Laboratory Solutions



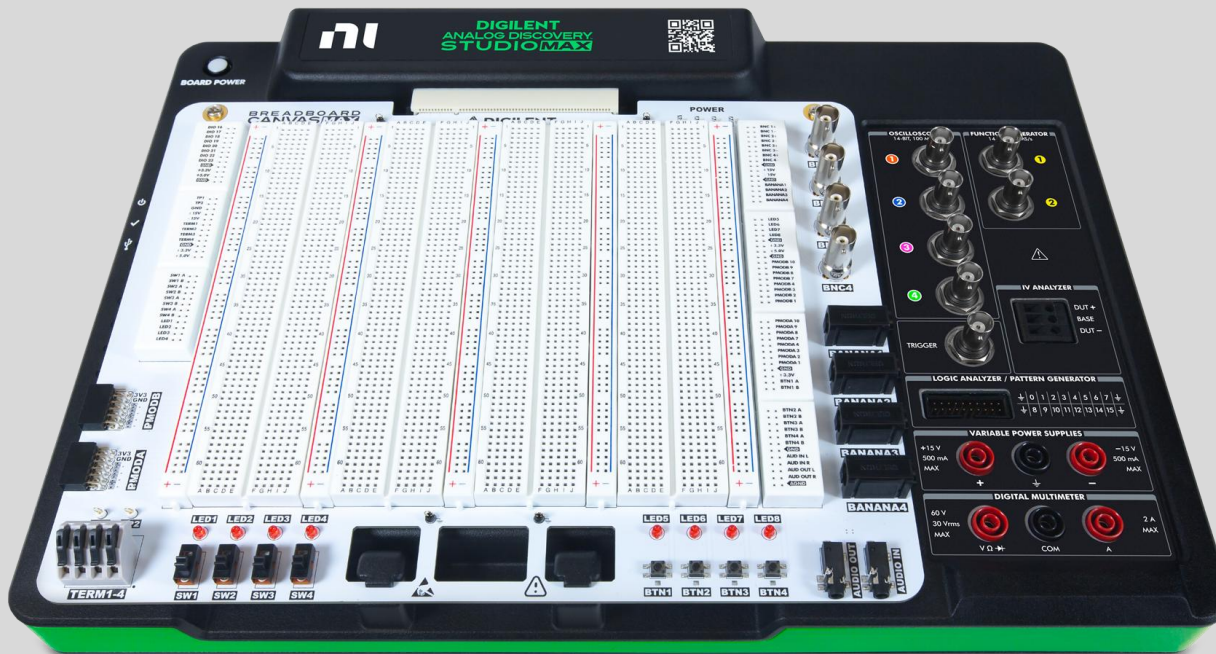
Accelerate Researcher
Discovery through NI's
Automated Measurement
Platform & Collaborate in Select
Areas to Advance Technology



Provide Employment
Opportunities for Students
through Engagement and Skill
Development

Analog Discovery Studio Max

Engineering Laboratory Solution for Project Based Learning



- **Oscilloscope**
4-CH 14-bit 100 MS/s 50MHz BW
- **Function Generator**
2-CH 14-bit 100 MS/s
- **Logic Analyzer / Pattern Generator**
16 Independent I/O at 100MS/s
- **Variable Power Supply**
±15V 500mA
- **Digital Multimeter**
4.5 Digit 50V 2A with LC Measurement Capabilities

Digilent Analog Discovery Pro 2440/2450

Mixed Signal USB Oscilloscope, Waveform Generator, Logic Analyzer, and Pattern Generator for \$1,999 US

Oscilloscope

- ADP2440: 4-CH, 12-bit, 600 MS/s, 100 MHz BW
- 100 MHz BW, ± 25 V
- ADP2450) 4-CH, 8-bit, 1 GS/s shared, 200 MHz BW

Function Generator

- 1-CH, 14-bit, 125 MS/s,
- 15 MHz BW, ± 5 V

DIO (Logic Analyzer, Pattern Generator)

- 16-CH, 125 MS/s

Software

- WaveForms for Windows, Mac, and Linux
- LabVIEW, C, C++, Python, and MATLAB

Learn more at www.ni.com/digilent



Multiple instruments in a compact form factor and cost-effective price