Integrated Data Acquisition
Signal Conditioning Systems
Precision Performance. Accurate Data. Repeatable Results.

Reliable Measurements. First Time. Every Time.

Qualification and performance testing is rigorous and unforgiving. Retests are expensive in both time and money. More often, they’re not even feasible. Test data must be captured correctly the first time. Thus, the reliability of the data acquisition system, the accuracy of the measurements and integrity of the data must be faultless for each and every test. The risk is too high to compromise on the test instruments.

That’s why for decades, customers worldwide rely on VTI.

Our customers depend on us to deliver highly accurate data when they are faced with their most critical testing needs. VTI systems deliver the highest performance available in a scalable, open-architecture platform. With powerful software tools that aid the developer in setup and control of test configurations, errors are absolutely minimized. These high-performance systems, whether LXI or VXI, have been proven to consistently deliver accurate, repeatable data in applications worldwide.
The Old Way: Non-Integrated Data Acquisition System

- complex
- time consuming
- expensive
- prone to data errors

The VTI Way: Integrated Data Acquisition Solution

- faster
- easier
- error free

EX1048A + VTLcoda = READY

Guarantee Accurate Results

Cut Development Time, Improve Test Integrity, Reduce Total Cost of Ownership.

Each of VTI's modular instruments is designed with configuration flexibility using industry standard interfaces minimizing obsolescence by supporting forward-looking and backward compatibility.

- Integrated solutions eliminate external cabling, simplify field installation and setup, and reduce concerns associated with electrical noise and maintenance.
- Powerful, turnkey software speeds setup and eliminates programming time, debugging and program validation.

- VTLcoda and DAC Express® are fully documented, reducing training time and assuring consistency of test duplication.
- Longevity – advanced industry standard designs outlive current test requirements.
- Open-architecture – seamless integration with other devices, including VXIbus, GPIB, PXI and LXI.

Proven Hardware for Precision Measurements

- End-to-end self-calibration assures repeatable, accurate results
- High-density scalable instruments easily handle high channel count applications
- Integrated signal conditioning and excitation optimizes input device performance and accuracy
- Advanced filtering on each channel
- Web-based monitor and control
- Easily aggregate multiple instruments to increase throughput
- Leverage the power of LXI to create large channel count systems
Next Generation
Instrumentation Performance.

Fully Synchronized
Distributed Measurement Capability

- Open-architecture – compatible with standard programming environments
- LXI Class A – seamless interface with external devices
- IEEE 1588 – deterministic synchronization and triggering
- Easily modifiable run-time test configurations
- Full feature programmability ensures that run-time test configurations, such as analog and digital filtering, gain ranges, bridge completion, and excitation sources, are easily defined

Powerful Software for Fast Setup
and Real-Time Data Monitoring

While our instruments are compatible with standard programming environments, our DAC Express and VTIcoda turnkey software programs are designed by experienced test engineers to accelerate test setup and simplify data acquisition, monitoring and analysis. These programming-free environments feature intuitive GUIs and provide auto instrument discovery and facilitate easy channel configuration. Data display formats are user-selectable for optimum visualization of test parameters.

Applications Worldwide and Global Support

VTI's overall design philosophy delivers cost-effective solutions that leverage a unique combination of precision accuracy, high-performance, modularity and reusability. With VTI, customers have total confidence in their test results; assurance of the lowest total cost of ownership; support from the industry’s leading test instrumentation company.

- Best-in-class solutions
- Choose from over 200 components and subsystems
- ISO9001:2000 registered
Faster. Better. Easier… LXI!

**LXI** More than Ethernet Connectivity

LXI brings the power of the Internet to DAQ instrumentation along with a powerful range of capabilities to enhance acquisition of data in critical test scenarios.

- Virtually unlimited, synchronized, distributed measurements (IEEE 1588 and LXI Class A Trigger Bus)
- Scalable performance for high channel counts
- High-speed data sampling and throughput even with multiple instruments via Ethernet switch or hub
- Flexibility of open-architecture for easy addition of third party instruments

Our LXI-based solutions easily create distributed data acquisition systems in a programming-free environment, saving time and money. The LXI interface allows the acquisition system to be placed closer to the test article. This reduces transducer cabling and simplifies installation, calibration and maintenance tasks.

**Powerful Development Tools to Build Test Systems Quickly with Complete Flexibility**

Choose Your Environment:

- DAC Express for the fastest, easiest setup and run
- VTIcoda – A powerful, full-featured program.
  - Easily manage hundreds or thousands of channels
- Or pick your favorite familiar programming environment
Turnkey DAC Express for Faster Setup and Run

DAC Express software is one of the most powerful data recording/logging software packages available. It quickly and easily provides setup, monitor and record functions for test applications. If your measurements include noise, vibration, temperature, pressure, strain, voltage, digital states, rpm or other transducer-based parameters – and you’re feeling the pressure of time – a DAC Express system is the right solution for you.

- Intuitive GUI. No programming required
- Combine synchronized multi-channel analog, digital, and frequency measurements
- File sizes up to 2 Giga samples per channel
- Combine dynamic and static measurements
- Multi-function data logging
- Auto-discovery of connected devices
- Simulation mode supports virtual setup before hardware is available
- Real-time display customizes easily to optimize visualization
- Easily export data to MATLAB™, Excel™ and other standard programs
VTIcoda Data Acquisition Software is a tightly integrated solution that supports VTI’s fully scalable hardware. This turnkey, out-of-box solution delivers a completely functional software environment from day-one, eliminating the learning curve and software development delays associated with other programming environments.

Menus for instrument setup, parameter selection, and display configuration reflect recommendations from experienced test engineers. They provide maximum utility without sacrificing instrument functionality. An intelligent interface queries the hardware and pre-loads information regarding specific parameters such as measurement type, gains, ranges, filter selections, and sample rates. This functionality greatly reduces the guesswork and eliminates configuration errors common with other general purpose data acquisition environments.

**Scalable Channel Architecture**

- Multi-user client/server system
- Intuitive GUI
- Strain and stress calculations in real time
- Event logging
- Supports up to 60 transducer types
- Standardized data interfaces
- Real-time calculated channels
- High-speed data logging
- Data replay and export
- Database management

Fully Documented Turnkey Program

- Faster setup, operation and data analysis
- Eliminates costly application programming
- No need to qualify custom software
- Simplifies training
- Eliminates software debugging

Preview DAC Express and VTIcoda at:
www.vxitech.com/dacx
www.vxitech.com/vticoda
EX1000A Series is an advanced, full-featured thermocouple and voltage measurement instrument providing superior measurement accuracy and repeatability through fully integrated signal conditioning, advanced cold junction compensation (CJC), and complete end-to-end self-calibration.

- Standalone compact 1 U instruments
- 48 independent channels per box
- Sampling rates up to 2000 Sa/sec/ch
- Synchronized precision measurements
- Unlimited expansion for high channel count
- Mix voltage and temperature channels
- Temperature channels support all thermocouple types
- Fully integrated signal conditioning
- Advanced cold junction compensation
- Independent programmable filtering per channel
- End-to-end self-calibration
- Independent open transducer detection
- Optional Trifilar filtering available
- Typical accuracies of +/- 0.2 degrees C
Leverage LXI Technology for Fully Distributed Measurements

Fully LXI Class A compliant, the EX1000A Series of instruments is ideal for distributed measurements throughout your facility. Connect directly to your Ethernet network using industry-standard Ethernet cable and connections, and experience how plug and play capability makes installation and setup easier than ever before.

Simplified Installation, Setup and Control

Onboard, Web-Accessible User Interface allows you to instantly verify communications and instrument functionality, while IVI and VXI Plug&Play drivers provide a familiar application programming interface to further reduce integration and program development time. For comprehensive, programming-free data recording setup, management and viewing, use EX1000A instruments with one of VTI's full-featured, turnkey software solutions – DAC Express or VTIcoda.

Select from Multiple Configurations

The EX1000 is available in several competitively-priced configurations to meet individual requirements.

Ordering Information

EX1000A 48-Channel Precision Voltage Instrument
EX1016A 16-Channel Precision Thermocouple Instrument
EX1032A 32-Channel Precision Voltage Instrument
EX1048A 48-Channel Precision Thermocouple Instrument
Option 001 Trifilar Filtering
High-Performance Remote Strain Gage Measurement Instrument

EX1629

The 48-channel EX1629 sets a new standard of performance for stress and fatigue testing. Independent 24-bit A/D converters on each channel, extensive software selectable filtering, and independent signal conditioning paths provide exceptional accuracy and reliability.

- Standalone compact 2 U instruments
- 48 channels per box
- Sample rates up to 25 kSa/sec
- 24-bit A/D converters per channel
- Per channel, software configured signal conditioning
- Integrated TEDS support
- Per channel bipolar excitation
- Complete end-to-end self-calibration
- Measure voltages up to 15 volts
Highest Accuracy. Lowest Overall Hardware Costs
The compact modular EX1629 delivers superior measurement accuracy at a cost-effective price per channel. This single instrument can perform both high-quality static and high-speed strain gage measurements in critical test applications. The EX1629’s flexible design makes it easy to reuse in future test programs resulting in the highest return on your hardware investment and keeping overall test hardware costs down.

Any Channel. Any Bridge or Voltage Input
The EX1629 features software-configured strain and voltage conditioning and excitation in a single 19-inch, 3 1/2 inch-high rackmount enclosure. This flexibility allows the connection of quarter, half, full bridge or voltage inputs to any channel, minimizing setup time and wiring changes. No need to reconfigure hardware to make measurement changes.

Performance and measurement integrity are enhanced with independent bridge excitation per channel. Bridge excitation sources are not shared between channels; single channel failures do not affect other channels.

Easily Combine and Measure 10,000+ Channels
For large data acquisition applications, multiple EX1629s are easily synchronized together in a master-slave relationship via the LXI external trigger bus. Easy strain gage wiring and conditioning for both static load and vibration testing greatly simplify high-channel count test setup.

Reduce Errors and Field Wiring Costs
Integrated Transducer Electronic Data Sheet (TEDS) provides positive transducer identification, eliminating cabling errors. Extensive testing has qualified the standard RJ-45 telecom connector and cable as the ideal low-cost physical connection for strain gages. This cuts cost and makes connections quicker.

Ethernet Interface Ideal for Distributed Environments
The EX1629 can be placed at strategic points throughout the test cell minimizing cabling and setup time. For comprehensive, programming-free data recording setup, management and viewing, use EX1629A instruments with one of VTI’s full-featured, turnkey software solutions – DAC Express or VTIcoda.

Ordering Information
EX1629 48-Channel High-Performance Strain Instrument
Multifunction Scanning Measurement and Switching System

EX1266

The EX1266 leverages the same technology that made SMIP the most successful modular switching platform for high performance requirements in the military and aerospace markets. Now, VTI makes this powerful solution commercially available for functional test systems, process monitoring, signal switching, automotive ECM, temperature/data logging, cable harness and battery testing. The primary functions for the EX1266 focus on signal switching, temperature/data logging, level detection and scanning DMM.

- Standalone compact 1 U instrument
- High-density switch subsystem
- Scanning 6.5 digit DMM
- Synchronized precision measurements
- Scalable (6 plug-in slots per chassis)
- Mix voltage and temperature channels
- Temperature channels support all thermocouple types & RTDs and Thermistors
- Built-in cold junction compensation
- Intuitive, web-based GUI for monitor and control
- Robust web-based interface simplifies setup and acquisition
Easy Setup and Control
- Internal 5-wire DMM bus simplifies cabling
- Multiple calibration sets yield more accurate data across temperature range. Up to eight per module
  - Calibrate across multiple ambient temperatures
  - Minimize inaccuracies attributed to temperature deviations
- Full-featured switching scan list and tight synchronization with DMM minimizes processor overhead, increasing test throughput
  - Switch/measure can be tightly integrated on board to minimize any latency in bus traffic
  - Smallest footprint available for switching/scanning applications – up to 432 2-wire multiplexer channels in 1U footprint
- LXI Class A communications interface eliminates platform obsolescence and support cost concerns

Scalable Architecture. Small Footprint.
Low-cost/channel across a wide-range of channel counts
- 1U provides granularity to address small channel requirements
- Multiple boxes ‘daisy-chain’ together for larger applications

Ordering Information
EX1266  6-slot mainframe, 1 rack U with built-in 6.5 digit DMM
EX1206  6-slot mainframe, 1 rack U, no internal DMM
EX1202  2-slot mainframe, 1/2 rack 1 U with built-in 6.5 digit DMM
EX1262  2-slot mainframe, 1/2 rack 1 U, no internal DMM
EX1266-3048  48-channel 2-wire 2 A multiplexer
EX1266-3048S  48-channel 2-wire FET multiplexer
EX1266-3096  96-channel 2-wire, 1 A multiplexer
EX1266-4003  128-crosspoint matrix, 2-wire, 2 A
EX1266-2002A  12-channel 16 A SPDT switch
EX1266-5002  30-channel 2 A SPDT switch
EX1266-7500  64-channel digital I/O
EX1266-7416  16-channel comparator/interrupter
EX1266-3608  8-channel, +/- 20 V, 20 mA analog output
Distribute your VXI-based Measurements

VTI leads the industry in VXIbus technology. Our systems handle all signal types for both high and low-speed data acquisition through the use of integrated signal conditioning plug-ins that deliver unmatched performance in modular-based systems. Recognizing that your existing VXI investment is significant, we will continue to deliver the most comprehensive, precision, high-performance VXIbus instruments available.

First LXI Class A Gigabit Ethernet Slot-0 Interface

EX2500A

- 40 MB/sec block transfer rates
- Fiber-optic interface permits 10km connections: PC to mainframe
- Embedded web interface for interactive control from anywhere in the world
- On-board LXI Trigger Bus distributes the VXI backplane trigger lines
- Backward compatibility with legacy VXI products
- Drop-in replacement for existing slot 0 interfaces
- VXI plug&play compliant

Synchronized Distributed Precision Measurement

The EX2500A slot 0 controller bridges VXI with LXI via an Ethernet interface. This facilitates new hardware compatibility with legacy systems, while delivering the power and flexibility of LXI.

Ordering Information

<table>
<thead>
<tr>
<th>EX2500A</th>
<th>LXI-VXI Gigabit Ethernet Slot 0 Interface</th>
</tr>
</thead>
<tbody>
<tr>
<td>EX2500A-15</td>
<td>Includes TCXO Timebase Option</td>
</tr>
<tr>
<td>EX2500A-16</td>
<td>Includes OCXO Timebase Option</td>
</tr>
</tbody>
</table>
Any Transducer, Channel Mix or Location

VTI can address your measurement challenges regardless of the transducer, channel mix or location. Modular, high-density VXIbus solutions are ideal for high-channel count applications where single drop control room approaches are favored. Combining this platform with the EX2500A, provides the bandwidth and horsepower needed to address today’s expanding high data throughput requirements.

- Integrated signal conditioning
- Flexible scanning/auto sequencing
- High-speed data transfers into controller
- Onboard data reduction and hi/low limit checking
- Powerful data acquisition and control
- Comprehensive onboard signal conditioning
- Wide choice of input/output signal types

High-Performance Scanning A/D with Integrated Signal Conditioning

VT1413C

The 64-channel VT1413C is ideal for high-performance data acquisition applications requiring a compact single slot configuration. This instrument features high-speed scanning, 16-bit resolution, high-accuracy, dual-ported FIFO buffer for fast data transfers, and a current value table for online data monitoring. Complete end-to-end self-calibration further enhances the measurement accuracy and stability.

Ordering Information

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
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<tbody>
<tr>
<td>VT1413C</td>
<td>Scanning A/D Converter, includes Spring Clamp Terminal Block</td>
</tr>
<tr>
<td>VT1413C-02</td>
<td>Scanning A/D Converter, includes Screw Connector Terminal Block</td>
</tr>
<tr>
<td>VT1413C-A3F</td>
<td>Interface to Rackmount Terminal Panel, deletes Spring Clamp Terminal Block</td>
</tr>
</tbody>
</table>
64-Channel A/D and Algorithmic Closed Loop Controller

VT1415A/VT1422A

The VT1415A and VT1422 instruments build on the functionality of the VT1413C by adding closed loop control and remote channel multifunction DAC capacities. These powerful data acquisition instruments can handle analog and digital input/output in both static and dynamic modes.

More Powerful Than PID Controllers

Easier to configure than large custom control systems, the VT1415A/VT1422 fills a unique niche providing both control and precise data acquisition functionality. The design includes an onboard DSP that assures all inputs, calculations, and outputs are completed between scan intervals, eliminating drift and jitter in the control algorithm. The user-programmable algorithms are easy to modify eliminating latencies common in higher level software.

Ordering Information

<table>
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<tr>
<th>Model</th>
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<tbody>
<tr>
<td>VT1415A</td>
<td>Algorithmic Closed Loop Controller, Includes Spring Clamp Terminal Block</td>
</tr>
<tr>
<td>VT1415A-02</td>
<td>Algorithmic Closed Loop Controller, Includes Screw Connector Terminal Block</td>
</tr>
<tr>
<td>VT1415A-A3F</td>
<td>Interface to Rackmount Terminal Panel, deletes Spring Clamp Terminal Block</td>
</tr>
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</table>

Multifunction Measurement and Control Module

VT1419A

The VT1419A is ideal for mixed sensor and mixed signal data acquisition and control of electronic and mechanical assemblies. Multiple SCP modules are easily combined permitting multiple test setups for mixed signals, both input and output, without adding additional instrumentation. Integrated signal conditioning eliminates external cabling and connections and provides more accurate and repeatable calibration.

Ordering Information

<table>
<thead>
<tr>
<th>Model</th>
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<tbody>
<tr>
<td>VT1419A</td>
<td>Multifunction Plus Measurement and Control Module</td>
</tr>
<tr>
<td>VT1419A-001</td>
<td>Delete 4 Direct Input SCPs</td>
</tr>
<tr>
<td>VT1419A-011</td>
<td>Screw Terminal Block</td>
</tr>
<tr>
<td>VT1419A-013</td>
<td>Spring-Clamp Terminal Block</td>
</tr>
<tr>
<td>VT1419A-A3F</td>
<td>Interface to Rackmount Panel, deletes Spring Clamp Terminal Block</td>
</tr>
</tbody>
</table>
VT1501A–VT1538A

- Adjust individual signal gains
- Signal filtering reduces sensor-based noise
- Over-voltage protection
- Open transducer detection
- Combine SCPs for a wide variety of inputs

Plug-On Modules Optimize Signal Conditioning

Each signal conditioning plug-on (SCP) is a modular, high-density transducer interface for use with the VT1413C, VT1415A, VT1419A, and VT1422A series of scanning A/D data acquisition instruments. SCPs are typically configured in 8-channel increments to uniquely address specific transducer characteristics.

SCP configuration options include fixed and programmable gains, filtering, signal conditioning for thermocouples, RTDs and thermistors, bridge measurements, event counting, frequency, resistance, digital I/O and analog outputs.

Ordering Information

VT1501A  8-channel Direct Input SCP
VT1502A  8-channel 7 Hz Low-pass Filter SCP
VT1503A  8-channel Programmable Filter/Gain SCP
VT1505A  8-channel Current Source SCP
VT1506A  8-channel 120 Ω Strain Completion & Excitation SCP
VT1507A  8-channel 350 Ω Strain Completion & Excitation SCP
VT1508A  8-channel x16 Gain & 7 Hz Fixed Filter SCP
VT1509A  8-channel x64 Gain & 7 Hz Fixed Filter SCP
VT1510A  4-channel Sample & Hold Input SCP
VT1511A  4-channel Transient Strain SCP
VT1512A  8-channel 25 Hz Fixed Filter SCP
VT1513A  8-channel ÷ 16 Fixed Attenuator & 7 Hz Low-pass Filter SCP
VT1518A  4-wire Resistance Measurement SCP
VT1521  4-channel High Speed Bridge SCP
VT1531A*  8-channel Voltage Output SCP
VT1532A*  8-channel Current Output SCP
VT1533A*  16-bit Digital I/O SCP
VT1536A*  8-bit Isolated Digital I/O SCP
VT1538A*  Enhanced Frequency/Totalize/PWM SCP

* For use with VT1415A, VT1419A and VT1422A.

Learn more about VTI Data Acquisition solutions and applications at www.vxitech.com
About VXI Technology, Inc.

VXI Technology, Inc. (VTI) is the market leader in functional test and data acquisition systems. ISO9001:2000 registered, the company serves the aerospace, automotive, avionics, defense, industrial automation, medical, satellite communications, and telecom markets. The company engineers and produces over 200 components and subsystems to build both custom and standard test systems. With plants in the U.S., Europe and Asia, worldwide product support is provided through a network of VTI-certified engineering representatives. VTI is a sponsor member of the VXI Consortium and a strategic/founding member of the LXI Consortium.

For more information visit vxitech.com or email sales@vxitech.com.