MODULAR INSTRUMENTS FOR FUNCTIONAL TEST

core ATE

RELIABLE DATA FIRST TIME EVERY TIME

VTI Instruments

Over 20 years of Excellence and Commitment to Our Customers

VTI Instruments has a rich history of partnering with many leading manufacturers of ATE systems and has been the leading provider of modular core ATE solutions for decades. VTI presides over the VXIbus consortium, co-founded the LXIbus standard, and is an active member of many other consortiums that drive test and measurement industry standards. Our commitment to long-term open-platform standards has enabled system integrators to develop common ATE systems that are not impacted by the effects of obsolescence using standard products that are designed to maintain active production status in excess of 15 years.

VTI core ATE solutions are at the heart of virtually every common ATE system worldwide and have a reputation for delivering innovative, modular high-density designs with common hardware and software architectures that can be leveraged throughout the life cycle of a product. Our modular products address applications that span a broad range of requirements, regardless of the platform.

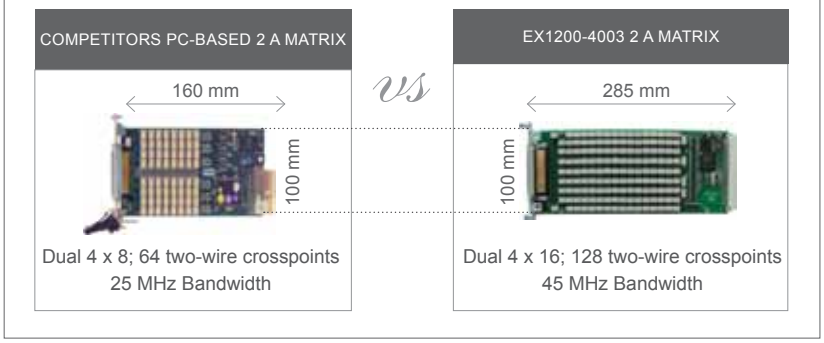
- LXI modular precision signal switching and I/O
- PXIexpress high-throughput instrumentation and signal switching
- VXI large-scale instrumentation and signal switching
- VME embedded instrumentation and signal switching
- Core Subsystems for ATE

Never Compromise Signal Integrity

VTI understands the importance of maintaining the integrity of a signal between the UUT and test instrument. Use LXI-based EX1200 instruments for applications that demand performance across small to large I/O counts. Our PXIe modules emphasize signal integrity for small systems, and our VXIbus modules combine density and modularity for industry leading large-scale solutions. For broadband switching, the EX7000 offers unparalleled scalability and COTS solutions for custom requirements.

AVAILABLE BOARD SPACE SIGNIFICANTLY IMPACTS PERFORMANCE OR DENSITY

Trying to achieve comparable channel-to-channel isolation,crosstalk, current rating specs results in density tradeoffs for PC-based solutions.



Platform Independent Solutions

	LXI EX1200	LXI EX7000	PXIe	VXI	VME
Signal Switching					
General Purpose	●		●	●	●
High-voltage	●			●	
Power	●		●	●	●
High-density Matrix	●			●	
Multiplexing	●		●	●	
RF	●		●	●	
Microwave	●	●		●	
Optical		●		●	
Instrumentaion					
High-speed Digitizers/Oscillioscopes			●		●
DMM	●			●	
Counter/Timers	●		●	●	
Programmable Resistors/Simulators	●			●	
Event Detectors	●			●	
DAC	●		●	●	
DIO	●		●	●	
AWG	●		●	●	
Communication					
RS-232/422/485			●	●	
Custom FPGA-based			●		
MIL-1553			●	●	

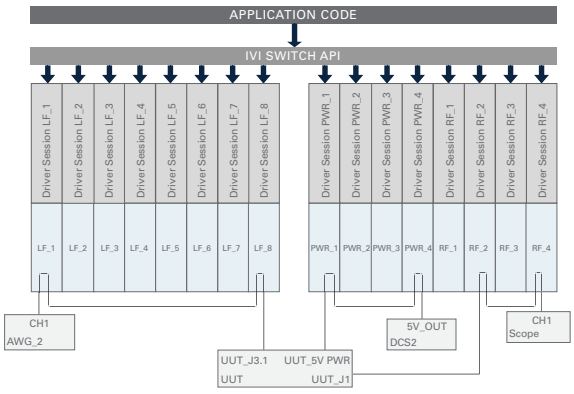
Our modular Core ATE products address a broad range of applications, regardless of platform, allowing our customers to pick the best product for their application.

Patent-pending 'System-Level' Software

TRUE END-TO-END PATH-LEVEL PROGRAMMING SIMPLIFIES DEVELOPMENT

Our software drivers incoporate extended capabilities that embed knowledge of the external wiring into the application programming interface. This provides the basis for true end-to-end path-level programming, allowing application developers the freedom to simply connect instrument I/O to DUT I/O through the system switch, without regard to any intermediate cabling.

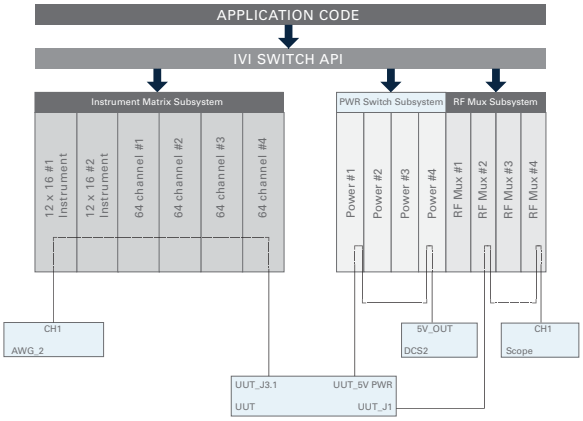
TRADITIONAL MODEL
A Collection of Modules and Independent Driver Sessions



A software interface for each switch module with no system-level knowledge increases coding effort.

ViStatus IviSwitch_Connect (SW13_Session, Ch1_A, Ch1_B);
ViStatus IviSwitch_Connect (SW15_Session, Ch3_A, Ch3_B);

VTI SYSTEM-LEVEL SOFTWARE APPROACH



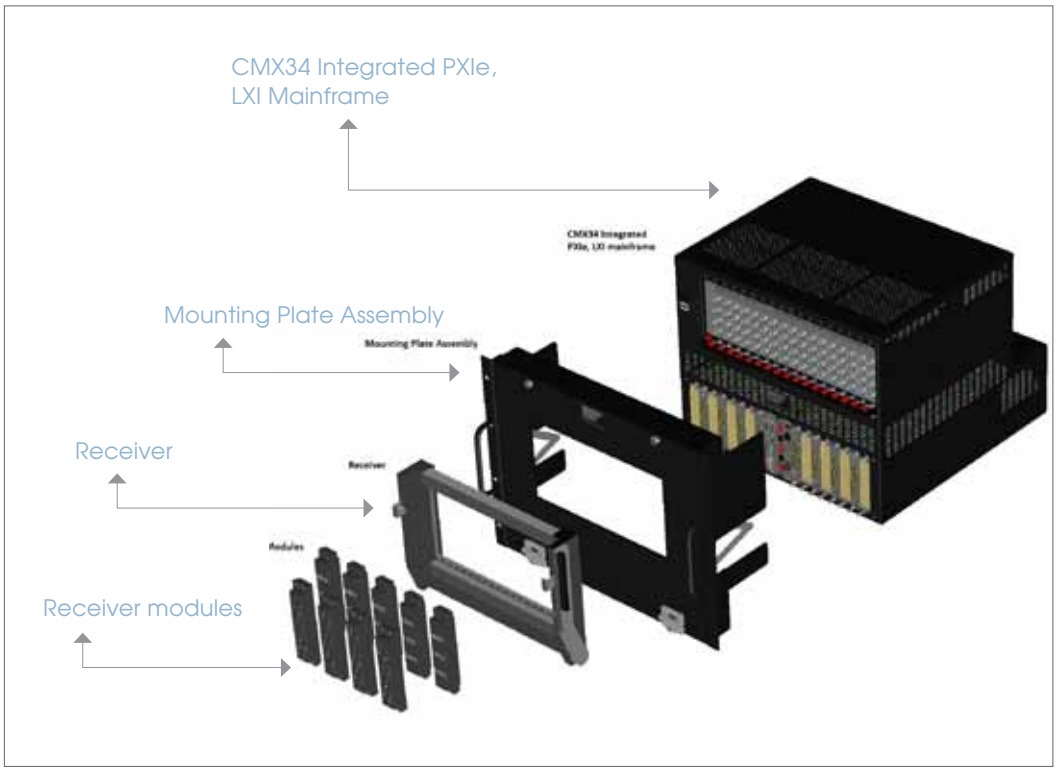
Software incorporating external wiring and module interconnects at the system-level reduces complexity and development time.

ViStatus IviSwitch_Connect (RFMUX_Session, SCOPE_CH1, UUT_J1);

vs

Core ATE Building Blocks and Modular Test Subsystems

VTI offers a broad range of subassemblies that simplify the test development process. All solutions are designed to maximize signal integrity throughout the entire signal path. Options include integrated mainframes, receiver assemblies from Virginia Panel and MAC Panel, as well as cabling and funnel assemblies designed to interface to any VTI module. Our experienced staff of application engineers can assist in any phase of the process to reduce development time, which includes providing a subsystem to complete turn-key system quotes.



Mainframes



MODEL NAME		DESCRIPTION
PXIE MAINFRAMES FOR MODULAR HIGH THROUGHPUT INSTRUMENTATION		
PXI	CMX05	5-slot (1 hybrid slot) rugged conduction cooled, dust and splash proof. DC input. Ideal for portable applications.
PXI	CMX09	9-slot (1 hybrid slot) flexible 4U chassis up to 2 GB/s slot bandwidth and 8 GB/s system bandwidth. Smart panel display for health monitoring and control.
PXI	CMX18	18-slot (8 hybrid slot) 4U chassis up to 4 GB/s bandwidth. Kits available for integrating with EX12xx precision switch and I/O instrument.
PXI LXI	CMX34	Complete CORE ATE mainframe that combines the high-throughput measurement capacity of the PXIe platform (18 slots) with high-density precision switching and I/O capability of LXI (16 slots).
LXI HIGH-DENSITY PRECISION INSTRUMENTS FOR SIGNAL SWITCHING AND I/O. PROVIDES TIGHTLY COUPLED MEASUREMENTS WITH INTEGRATED 6.5 DIGIT DMM, DACS, DIO, LOADS, COUNTERS AND SIMULATORS		
LXI	EX1202	2-slot 1U half rack integrated switching and I/O instrument with internal 300 V measurement bus, Ethernet interface, built-in web server and LXI trigger bus.
LXI	EX1262	2-slot 1U half rack instrument with integrated 6.5 digit DMM, internal 300 V measurement bus, Ethernet interface, built-in webserver and LXI trigger bus.
LXI	EX1206A	6-slot, 1U integrated signal switching and I/O instrument, internal 300 V measurement bus, Ethernet interface, built-in webserver and LXI trigger bus.
LXI	EX1208A	16-slot, 3U integrated signal switching and I/O instrument, internal 300 V measurement bus, Ethernet interface, built-in webserver and LXI trigger bus.
LXI	EX1208A-HP	16-slot, high-power 878 W, 3U integrated signal switching and I/O instrument, internal 300 V measurement bus, ethernet interface, built-in webserver and LXI trigger bus.
LXI	EX1209A	14-slot, 3U integrated signal switching and I/O instrument with 8 standard slots, 6 high density matrix slot and internal high-frequency 24 line bus.
LXI	EX1207A	12 high-density precision switch matrix slots, with an internal high-frequency 24 line bus, allows over 2,100 instrument-grade crosspoints in a 3U mainframe.

Controller and Timing Cards for PXIe



MODEL NAME		DESCRIPTION
ETHERNET CONTROLLER		
PXI	**CMX-2500**	Gigabit Ethernet, LXI based interface delivering high-speed, easy connectivity to PXIe with cloud technology for data storage and manipulation. Provides OS and computer platform independence.
PXIE TO PCIE CABLES - DIRECT, SOFTWARE TRANSPARENT LINK BETWEEN PXI EXPRESS INSTRUMENTS AND HOST PC AT UP TO 5.6 GB/S		
PXI	**EMX-1501C-003**	1 lane Gen 1 PCIe host with 3 m copper cable. 200 MB/s sustained throughput.
PXI	**EMX-1504C-003**	4 lane Gen 1 PCIe host with 3 m copper cable. 800 MB/s sustained throughput.
PXI	**EMX-1504F-003**	4 lane Gen 1 PCIe host with 3 m fiber optic cable 800 MB/s sustained throughput.
PXI	**EMX-1516C-003**	16 lane Gen 2 PCIe host with 3 m copper cable. 5.6 GB/s sustained throughput.
PXI	**EMX-1501L-003**	1 lane Gen 1 PCIe host connects to laptop computers with 3 m copper cable. 200 MB/s sustained throughput.
TIMING CARD		
PXI	**NI PXIe-6674T**	Timing and multichassis synchronization module. Only required if not using the CMX-2500 LXI interface.


Instruments



MODEL NAME		DESCRIPTION
DMMs		
LXI	EX1200-2165	6.5 digit DMM for EX1206A 1U LXI Mainframe, tightly integrated through an internal bus for high-speed scanning and measurements without need for external cabling.
LXI	EX1200-2365	6.5 digit DMM for EX1208A 3U LXI Mainframe, tightly integrated through an internal bus for high-speed scanning and measurements without need for external cabling.
LXI	EX1200-2175	7.5 digit DMM for EX1206A 1U LXI Mainframe, tightly integrated through an internal bus for high-speed scanning and measurements without need for external cabling.
LXI	EX1200-2375	7.5 digit DMM for EX1208A 3U LXI Mainframe, tightly integrated through an internal bus for high-speed scanning and measurements without need for external cabling.
COMPARATORS/EVENT DETECTORS		
LXI	EX1200-7416	16-differential channel with up to ±100 V, time-stamped (1 µs) comparator/interruptor/event detector to detect edges, fault conditions. Can measure voltage and pulse timing.
DIGITIZERS - EMX SERIES FOR UNPRECEDENTED SPEED, MEASUREMENT PERFORMANCE AND FPGA CUSTOMIZATION		
PXI	EMX-4350	409.6 kSa/s DSA instrument, 4 independent, differential channels, >98 dB distortion and 0.01 dB flatness, CMRR of -160 dB, <500 µV DC measurement performance, aggressive anti-aliasing filtering, programmable 2 mA to 20 mA excitation, 24-bit, advanced hardware system-on-a-chip (SoC) and FPGA personalization, internal self-test/self-calibration.
PXI	EMX-4150	144 kSa/s DSA instrument, 16 independent channels, <500 µV DC measurement performance, optimized for AC and DC coupled transducers, 24-bit, advanced hardware system-on-a-chip (SoC) and FPGA personalization, compatible with ICP signal conditioning accessories, internal self-test/self-calibration.
PXI	EMX-4250	204.8 kSa/s DSA instrument, 16 independent channels, 24-bit, exceptional general purpose digitizer optimized for AC coupled transducers, advanced hardware system-on-a-chip (SoC) and FPGA personalization, compatible with ICP signal conditioning accessories, internal self-test/self-calibration.
PXI	EMX-6010	10 MSa/s high-speed instrument, 8 independent channels, 16-bit, 1 MHz bandwidth, aggressive anti-aliasing filters > -80 dB per octave, 10x oversampling, and extensive on-board signal processing capabilities, advanced hardware system-on-a-chip (SoC) and FPGA personalization, internal self-test/self calibration.
PXI	EMX-5290	144 kSa/s strain and voltage instrument, 12 independent channels, internal bridge completion and shunt calibration, independent regulated bridge excitation, TEDS support, along with internal self-test/self-calibration.
PXI	EMX-3241	ICP/voltage signal conditioning accessory, 16 independent channels, excitation and signal conditioning for a wide variety of accelerometers, acoustics and other transducers.

Instruments



MODEL NAME		DESCRIPTION
PRECISION SOURCES, TACHS, COUNTERS, DIO		
PXI	EMX-1434	192 kSa/s arbitrary waveform source, 4 independent channels, integrated tachometer, synchronized DSA source and rotational measurement capability, 8 channels DIO, internal self-test/self-calibration.
LXI	EX1200-3608	8-channel independent, isolated, 500 kSA/s, 16-bit current (20 mA) and voltage (+20 V) source with extensive triggering capability. Connect in series to achieve up to 160 mA or 160 V output.
LXI	EX1200-3604	4-channel independent, isolated, 500 kSA/s, 16-bit current (20 mA) and voltage (+20 V) source with extensive triggering capability. Connect in series to achieve up to 80 mA or 80 V output.
LXI	EX1200-1538	Multifunction module with 8-channel of independent 1 MHz frequency counters (±48 V differential inputs), 16 isolated 60 V digital I/O and dual isolated 16-bit analog outputs programmable in current or voltage mode and frequency to voltage conversion mode.
LXI	EX1200-7500	64-channel, time-stamped 8-bit 8-port DIO and relay driver (300 mA sink and up to +60 V) with 2.5 MHz clock rate. Large on-board memory (2 MB) and extensive synchronization and triggering.
SENSOR SIMULATORS		
LXI	EX1200-7600	5 W programmable load with 0.5 Ω to 1 MΩ range and 0.1 Ω step size. Over-voltage, over-current and over-temperature sensing protects unit under test, and external voltage and current sense for monitoring UUT.
LXI	EX1200-7008	8-channel, glitch-free 2-/4- wire resistance temperature (RTD) sensor simulator with direct temperature value programming for Ni/Cu/Pt RTD types as well as user defined types.
MODULAR PROTOTYPING BOARDS		
LXI	EX1200-7000	Modular prototyping board with 6"x 3.7" thru hole bread board space, 96 DIO lines, 3 power supplies, 10 MHz clock signal and choices of front panel connectors for creating custom designs.
COMMUNICATION INTERFACES		
PXI	PXI-C1553-EF-1	Single, dual or quad channel dual redundant MIL-STD-1553 bus interfaces, concurrent BC, multi-RT (31) and BM operations; IRIG-B time code encoder/decoder and software selectable coupling and bus signal amplitude; 128 MB RAM.
PXI	PXI-C1553-EF-2	
PXI	PXI-C1553-EF-4	
PXI	PXI-C429-4	4/8/16/32 channel ARINC 429 Interfaces; Chronological Bus Monitor of all channels to 1 µs resolution; IRIG-B time encoder/decoder; In-line data corruption capabilities; 5 to 16 fully programmable discrete lines.
PXI	PXI-C429-8	
PXI	PXI-C429-16	
PXI	PXI-C429-32	

Integrated Switching and I/O

MODEL NAME		DESCRIPTION
HIGH-VOLTAGE MULTIPLEXERS		
LXI	EX1200-2007A	48-channel, dual (1x24) 1-wire or (1x12) 2-wire, 1000 V multiplexer. Large shield planes and high track separation to reduce crosstalk and voltage spikes on adjacent channels and maintain signal integrity. Ideal for high-voltage scanning, hi-pot, cable breakdown, and power supply switching.
LXI	EX1200-2008H	30-channel, 3 (1x10) blocks, 1000 V multiplexer. Large shield planes and high track separation to reduce crosstalk and voltage spikes on adjacent channels and maintain signal integrity. Ideal for high-voltage scanning, hi-pot, cable breakdown, and power supply switching.
MULTIPLEXERS		
LXI	EX1200-3001	128-channel, eight (1x16) 1-wire or (1x8) 2-wire or (1x4) 4-wire, 300 V/2 A multiplexer. Best-in-class performance at this density - 60 W, 125 VA switching, 50 MHz bandwidth.
LXI	EX1200-3048	48-channel, dual (1x24) 2-wire, 300 V/2 A multiplexer. Unmatched performance for density - 60 W, 125 VA switching, 40 MHz bandwidth.
LXI	EX1200-3048S	48-channel, dual (1x24) 2-wire, 250 V, high-speed FET multiplexer. The 3048S is one of the only FET multiplexers in the market that support 250 V switching. FET switch offers virtually infinite life and are ideal for applications that require high-speed switching over prolonged periods like battery tests and thermocouple and RTD switching.
LXI	EX1200-3072	72-channel, dual (1x36) 2-wire, 300 V/2 A multiplexer. Best-in-class performance at this density - 60 W, 125 VA switching, 40 MHz bandwidth.
PXI	SMX-3272	144 channel, dual (1x72) 1-wire, 300V/2A multiplexer, programmably reconfigurable as 2- or 4-wire. High performance PXIe card, 30 MHz bandwidth and < -60 dB crosstalk at 1 MHz.
LXI	EX1200-3096	96-channel, dual (1x48) 2-wire, 100 V/0.5 A multiplexer.
LXI	EX1200-3164	64-channel, 16 (1x4) 2-wire, 300 V/2 A multiplexer. Maximum flexibility through programmable reconfigurability - 16 (1x4), 8 (1x8), 4 (1x16), 2 (1x32), or 1 (1x64) configurations.

Integrated Switching and I/O



MODEL NAME		DESCRIPTION
MATRICES		
LXI	EX1200-4120HPM	192 crosspoint, (12x16) 1-wire, 200 V/1 A high-density matrix for EX1207 and EX1209 mainframes.
LXI	EX1200-4003	128 crosspoint, dual (4x16) 2-wire, 300 V/2 A matrix, programmatically reconfigurable as (8x16) or (4x32) 2-wire. Best-in-class performance at this density - 45 MHz bandwidth and exceptional crosstalk.
PXI	SMX4048	128 crosspoint, four (4x8) 2-wire, 300 V/2 A matrices, internally reconfigurable from 8x8's to (4x64). Internal self test identifies relays nearing end of life and ensures continued reliability and performance.
LXI	EX1200-4128	512 crosspoint, 4x128 high-density matrix. The 4128 achieves high performance and reliability in a large matrix by using stub breaking relays to eliminate unterminated stub effect.
LXI	EX1200-4264	128 crosspoint, dual (2x32) 2-wire, 300 V/2 A matrix, programmatically reconfigurable as 2x64 with extensive signal shielding and true differential routing.
HIGH-CURRENT GENERAL PURPOSE SWITCHES		
LXI	EX1200-2001	20-channel, 16 A SPST switch with high-breakdown voltage (1000 V), and fail-safe interrupt to detect fault conditions.
PXI	SMX2001	12-channel, 16 A SPST switch with high-breakdown voltage (1000 V), and fail-safe interrupt to detect fault conditions.
LXI	EX1200-2002	12-channel, 16 A SPDT switch. Only switch in its class capable of switching up to 16 A current. Ideal for switching power supplies and current sources.
GENERAL PURPOSE SWITCHES		
LXI	EX1200-5001	80-channel, 300 V/2 A, SPST switch. Best in class performance at this density - 60 W/125 VA switching, lowest crosstalk - less than 60 dB at 1 MHz.
PXI	SMX5001	80-channel, 300 V/2 A, SPST switch. Highest performance PXIe card at this density - more than 30 MHz switching bandwidth, extensive shield planes used for noise immunity.
LXI	EX1200-5002	32-channel, 300 V/2 A, SPDT switch. Best in class performance at this density - 60 W/125 VA switching, 30 MHz bandwidth and lowest crosstalk - less than 60 dB at 1 MHz.
LXI	EX1200-5004	32-channel, 5 A, SPDT switch. Highest current switching capability at it's density.

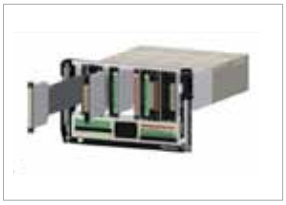
Integrated Switching and I/O

MODEL NAME		DESCRIPTION
RF SWITCHES		
LXI	EX1200-6101	Ten SP4T coaxial trees , > 1.3 GHz, 50 W maximum power and < -65 dB crosstalk and isolation.
LXI	EX1200-6102	17 SPDT coaxial switch, > 2 GHz, 50 W.
LXI	EX1200-6216	Dual (1x16), high-power 50 W, 1 GHz RF multiplexer, with exceptional, < -75 dB crosstalk and isolation.
LXI	EX1200-6216HV	Dual (1x16) high-voltage (500 V) coaxial star switch > 250 MHz.
LXI	EX1200-6301	Four SP4T multiplexer tree, > 3 GHz. Switch up to 250 V/2 A, 60 W/62.5 VA - highest in it's class.
PXI	SMX6301	Four SP4T multiplexer tree, > 3 GHz. Switch up to 250 V/2 A, 60 W/62.5 VA - highest in it's class.
LXI	EX1200-6301T	Four SP4T multiplexer tree, > 3 GHz with 50 Ω termination. Switch up to 250 V/2 A, 60 W/62.5 VA - highest in it's class.
PXI	SMX6301T	Four SP4T multiplexer tree, > 3 GHz with 50 Ω termination. Switch up to 250 V/2 A, 60 W/62.5 VA - highest in it's class.
MICROWAVE SWITCHES		
LXI	EX1200-7100	2-slot microwave switch carrier with relay driver with capability to switch anywhere between DC to 26 GHz, holds up to 3 microwave switches per module.
PXI	SMX7100	2-slot microwave switch carrier with relay driver with capability to switch anywhere between DC to 26 GHz, holds up to 3 microwave switches per module.
LXI	EX71HD	1U, 26.5 GHz modular microwave switch platform. Combine up to 12 front pluggable building blocks - SPDTs, SP4Ts, SP6Ts, or transfer switches, in a compact 1U footprint - highest density in the industry.
LXI	EX7204	2U, half rack, 26.5 GHz modular microwace switch platform. Combine up to 16 SPDTs or 8 multiport high performance relays and signal conditioning modules on one platform. Easily reconfigurable for changing test needs.
LXI	EX72SF	2U, 20 GHz, 26.5 GHz, and 40 GHz high performance modular microwave switch platform. Combine up to 6 SPDTs and 6-multiport high-performance building blocks. Easily reconfigurable for changing test needs.
LXI	EX7300 (3U) to EX7600 (6U)	Complete enclosures for custom microwave switch development. Includes 150 W power supply, relay drivers, LXI class A interface, and removable tray for mounting components and interconnects.

Core Subsystem Options & Accessories

MODEL NAME	DESCRIPTION
MAINFRAME AND GENERAL PURPOSE INTERFACE SOLUTIONS; VIRGINIA PANEL	
EX1208A-G18	EX1208A core switch and I/O instrument, VPC G18 receiver and slide rails.
CMX18-G18	CMX18 PXIe mainframe, VPC G18 receiver and slide rails.
CMX34-G18	CMX34 PXIe, LXI, integrated mainframe with VPC G18 receiver, mounting plate/rack mount kit, handles and slide rails.
CMX34-000	CMX34 PXIe, LXI, integrated mainframe with blank panel for customization, mounting plate/rack mount kit, handles, 1U cable tray and slide rails
CMX34-001	CMX34 PXIe, LXI, integrated mainframe with plexi-glass door, mounting plate/rack mount kit, handles, 1U cable tray and slide rails.
ATE RECEIVER CABLING SOLUTIONS; VIRGINIA PANEL	
CAS-200/256-XX	200p HD SCSI to 192p Receiver Module; 1 A -20 = 20″ cable length -36 = 36″ cable length (Consult Factory for pricing)
CAS-160/192-XX	160p DIN to 192p Receiver Module; 4 A -20 = 20″ cable length -36 = 36″ cable length (Consult Factory for pricing)
CAS-104/192-XX	104p D-sub to 192p Receiver Module; 5 A -20 = 20″ cable length -36 = 36″ cable length (Consult Factory for pricing)
CAS-44/96-XX	44p D-sub to 96p Receiver Module; 5 A -20 = 20″ cable length -36 = 36″ cable length (Consult Factory for pricing)
CAS-52/76-XX	Coax Cable Assembly. Dual 26p Coax to 76p Receiver Module.
CAS-41/50-XX	41p power plug to 50p Receiver Module; 22 A -20 = 20″ Cable Length -36 = 36″ Cable Length (Consult Factory for pricing)

Core Subsystem Options and Accessories



MODEL NAME	DESCRIPTION
MAINFRAME AND GENERAL PURPOSE INTERFACE SOLUTIONS; MAC PANEL	
EX1208-SCX	EX1208A core switch and I/O instrument, MAC Panel pull-through receiver with I/O expansion.
CMX18/1206A-SCX	CMX18 PXIe mainframe and EX1206A 1U switch I/O instrument to MAC Panel ScoutXT interface.

Notes

VTI INSTRUMENTS

PRECISION INSTRUMENTATION AND SWITCHING FOR

core ATE

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