



-eatures

8 input ranges including a 100 mV range allows use of low sensitivity transducers

True balanced differential inputs

On-board user-programmable DSP greatly improves total system performance

User programmable digital anti-alias filters, with API controllable FIR and Bessel filter

FIR digital anti-alias filter provides linear phase response for accurate single and cross channel measurements

Multiple breakout box options with built-in signal conditioning including charge inputs, simplify tests and reduce cost

Optional arbitrary source or dual input tachometer

32 MB on card FIFO memory plus optional local bus allows data records up to 146 GB with the VT2216A VXI data disk, and larger data files to external SCSI disks

8/16-channel 102.4 kSa/s 24-bit digitizer plus DSP

VT1432B

Nverview

The VXITechnology VT1432B digitizer is a C-size, single slot, register-based VXI module that includes DSP, transducer signal conditioning, alias protection, digitization, and high-speed measurement computation. You can even add an optional arbitrary source or dual-input tachometer. On-board computation of measurement results, fast data transfer to the host computer, and a dedicated high-speed data bus for module-to-module communication all combine to provide outstanding measurement architecture for demanding mechanical, acoustic and electrical test applications. Putting so much capability in a single module decreases system cost while increasing system performance.

The VT1432B may contain up to four 4-channel input assemblies so that the module may have a total of up to 16 inputs. On-board digital signal processing and 32 MB of RAM maximizes total system performance and flexibility.

New redesigned 24 bit digitizer input combined with the largest number of input ranges allows the VT1432B to operate in the most optimum measurement range. Even low sensitivity/low output level transducers work well with the VT1432B. The high performance floating point DSP used for the linear phase FIR anti-alias filters is also user programmable with TI's Code Composer Studio. A standard JTAG interface is included to ease interfacing to this DSP. The FIR anti-alias filter vastly improves the phase accuracy of all channels relative to the tachometer, trigger and other channels.

Specifications

Frequency

Sampling Rate: Maximum Minimum

102.4 kSa/s 2 Sa/s

Decimate by 5 and 2 filters provide lower sample rate settings. External sampling allows continuous settings from 102.4 kSa/s to 40.96 kSa/s.

Frequency Bandwidth Maximum Minimum resolution	46 kHz 244 µHz
FFT Block Size (samples):	32 to 8192
Input	
Number of Channels:	16
Option 1DE:	8

VT1432B



8/16-channel 102.4 kSa/s 24-bit digitizer plus DSP

Full Scale Input:	100 mV, 200 mV, 500 mV 1 V, 2 V, 5 V, 10 V, 20 V Add 23% to include over- range capability.	Dynamic Range			
Ranges (in volts peak):		Spurious Free Dynamic Range: (includes spurs, harmonic distortion, inte	-112 dBfs (typical) rmodulation distortion, alias products)		
Input In	npedance:		Aliased Responses:	<-115 dB (typical)	
	Differential	1 M Ω nominal	Crosstalk:	<-90 dBfs (typical)	
	Either side-to-chassis	500 kΩ, 35 pF nominal	Trigger		
ac Coup	oling 3 dB Corner Freq:	<1 Hz	Trigger Detection:	Digital	
Commo	n Mode Rejection Ratio: dc coupled, dc to 1 kHz	>70 dB	Trigger Modes:	Input, external, source, TTL, TRG, RPM (with opt AYF)	
	ac coupled, 40 Hz to 1 kHz	>60 dB	Arbitrary Source Option	1D4	
	Maximum signal, either	+20 Vp	General		
	side-to-chassis	220 10	Output Modes:	Sine and pseudo random	
Amplitu	de Over-Range Detection: Over-range indication after Common Mode	±22.5 V		with burst and band translation, arbitrary waveform with loop or continuous output	
	overioau (typical)		Frequency Bandwidth		
	Differential overload	130% of range	Sine, noise modes: Beconstruction filter	0 Hz to 25.6 kHz	
	Over-voltage Protection	42 Vp	bandwidth	0 HZ 10 20.0 KHZ	
Residua	ll dc:	<±3 mV	DSP data rate (Fs)	48.00 kHz to 65.536 kHz	
Amplit	tude		Data word size	16 bits	
Amplitu	Ide Accuracy at 1 kHz:	±0.06 dB	Arb modes:		
Flatnes	s (relative to 1 kHz, at full s dc to 46 kHz	scale): ±0.01 dB	Reconstruction filter bandwidth	0 Hz to 6.4 kHz	
Amplitu	de Resolution:	24 bits	Data word size	20 bits	
*16-bits ir	n some ranges for faster data thro	ughputs	Signal Output		
Cross-channel Match (any VT1432B module in the same mainframe)		Number of Output Channels	1		
Cross-cl Amplitu	hannel Ide Match:	±0.01 dB (full-scale signal, Input ranges equal, frequency above 10 Hz if	Maximum Amplitude	10 Vp nominal	
		ac coupled	Output Impedance	<0.5 Ω (typical)	
Cross-c	hannel Phase Match:	<±0.1 ° at 1 kHz	Maximum Output Current	100 mA (typical)	
Phase N	Natch Relative to Tach:	<±0.1 ° (typical)	Maria		
			Maximum Capacitive	υ.υτ με (typical)	

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8/6 channel 102.4 kSa/s 24-bit digitizer plus DSP

Amplitude Control:	
Maximum amplitude	10 Vp nominal
Amplitude ranges	79 mVp to 10 Vp in 0.375 dB steps
Amplitude scale factor	0.0 to 1.0, with 20-bit resolution
Residual dc Offset:	
Offset after autozero	±2 mV
Offset after shutdown	±20 mV
Zeroing resolution	100 µV
Output Overload Trip:	>17 V
Amplitude Ramp-down Time:	0 s to 30 s (Programmable)
Shutdown:	
Shutdown input	TTL levels
Shutdown time	<5 s
Shutdown time, ac fail	<4 ms

Tachometer Input - Option AYF

General

Option AYF, Tachometer Input, provides two tachometer inputs. When this option is installed, 2 of the 3 SMB connectors on the VXI module are used for tachometer inputs. When this option is not installed, these connectors are normally used for "External Sample" and "Trigger." Each tachometer input has a programmable trigger level. Each tach pulse causes a "Tach Edge Time" to be recorded in a 16 kword FIFO. A "Tach Edge Time" is the instantaneous value of the 32-bit "Tach Counter". A "Decimate" number can be set to ignore a number of tach pulses before recording each Tach Edge Time. A "Holdoff" time can be set to avoid false triggering due to ringing.

One of the tachometer inputs can be programmed for use as a trigger input rather than a tachometer input. In this mode, the tachometer option can trigger the system and measure the time between the trigger and the next sample clock edge. The analog signal from either of the tachometer inputs can be routed to an input channel using the internal calibration path.

Tach Counter:	32-bit counter with roll-over detector bit
Decimate Counter:	16-bit counter
Input Signal Trigger Level (typical): Voltage Range	-25 V to +25 V
Resolution, levels $<\pm 5$ V	40 mV
Resolution, levels $>\pm 5$ V	200 mV
Hysteresis	Programmable, 0 mV to 250 mV
Slope	Programmable, positive or negative
Input Signal Timing:	
Minimum pulse width	5 µs
Maximum pulse rate	100 kHz
Trigger hold off	1 to 65536 clock periods
Input Impedance:	20 kΩ (typical)

VXI System Level Features

VXI Standard Information:

Conforms to VXI revision 1.4 C-size, single slot width, register-based programming, "Slave" Data Transfer Bus functionality, A24 address capability, and D32 data capability. Optional Local Bus capability SUMBUS driver and receiver. Requires 2 or 4 TTLTRG lines for multi-module synchronization.

Software

Driver Type:	VXIplug&play C libraries with source code and ME4X ActiveX driver
Supported Operating Systems:	MS Windows, Linux, HP-UX
Plug&Play Compliance:	MS Windows, Linux, HP-UX

VT1432B

8/16-channel 102.4 kSa/s 24-bit digitizer plus DSP

Environmental

Storage

Operating Restrictions:

Ambient Temperature	0 °C to 55 °C
Humidity, Non-condensing	20% RH to 90% RH at 40 °C
Maximum Altitude	4600 meters (15,000 feet)
and Transport Restrictions:	
Ambient Temperature	-20 °C to 65 °C

Humidity, Non-condensing	20% RH to 90% RH at 40 °C
Maximum Altitude	4600 meters (15 000 feet)



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-eatures

On-board DSP greatly improves total system performance

Built-in signal conditioning simplifies tests and reduces cost

Anti-alias protection from 0.4 Hz to 88 kHz guarantees reliable data

Local Bus gives high-speed data capture to VT2216A data disk

Optional 16/20-bit arbitrary source or dual input tachometer

VXIplug&play-compatible with Windows and HP-UX drivers

Multiple breakout box options

8-channel 196 kSa/s Digitizer plus DSP

N verview

The VXITechnology VT1433B 8-channel digitizer is a C-size, single-slot, register-based VXI module that includes DSP, transducer signal conditioning, alias protection, digitization, and high-speed measurement computation. You can even add an optional arbitrary source or dual-input tachometer. Onboard computation of measurement results, fast data transfer to the host computer, and a dedicated high-speed data bus for module-to-module communication, all combine to provide an outstanding measurement architecture for demanding mechanical, acoustic and electrical test applications. Putting so much capability in a single module decreases system cost while increasing system performance.

The VT1433B 8-channel 196 kSa/s Digitizer plus DSP is a C-size VXI module, and may contain either one or two four-channel input assemblies so that the module may have a total of up to eight inputs.

On-board digital signal processing and 32 MB of RAM maximizes total system performance and flexibility.

Specifications

Input

Full Scale Input Ranges: (in volts peak)	5 mV to 10 V (1,2,5 steps)
Maximum Input Level:	42 Vp
Input Impedance (dc coupled or a	c coupled above 10 Hz)
Differential	2 M Ω nominal
Either side-to-chassis	1 MΩ nominal
Programmable ac Coupling 3 dB Corner Frequency (two-pole, 12 dB/octave)	1 to 100 Hz
Common Mode Rejection Ratio ac or dc coupled, 10 Hz to 1 kHz	>70 dB
Maximum signal, low side to chassis	±10 Vp
Maximum signal, high side to chassis (VT =0)	±11.5 Vp
Maximum signal, high side to chassis	VT ±10 Vp (must be ≤20 V) (VT = transducer offset cancellation voltage setting)



		Maximum Cross Chan	nel Phase Match Error
8-channel 196 kSa/s Di	gitizer plus DSP	10 1 Hz 10 Hz 100 Se 1	Hz
Amplitude Over-Range Detection: Common mode overload	±11.5 Vp (typical)		
Differential mode overload (dc coupled)	105% of full scale		Coupling
Frequency: Sample rate	196,608 to .15 Sa/Sec	1 Hz 10 Hz 100 Hz Frequ	1,000 Hz 10,000 Hz 100,000 Hz Iency - Hz
Bandwidth	88,320.001 to 0.06 Hz		
Frequency Accuracy:	±0.012% (120 ppm)	Dynamic Range	
Differential Mode Overload (ac con for cutoff frequency	u pled): 100% of full scale	Resolution:	16 bits
≤o Hz for cutoff frequency >6 Hz	50% of full scale, worst case	(includes spurs, harmonic distortion, alias products and s	:: ortion, intermodulation idebands >300 Hz)
Residual dc	1% of full scale +2 mV	51.2 kSa/s Fs. ≤ 1 Vp	<-90 dBfs (typical)
Amplitude			
Amplitude Accuracy at 1 kHz [.]	+0.5% of reading +0.01%	48 kSa/s to 65.536 Sa/	s Fs <-80 dBfs
	of full scale	above 65.536 Sa/s Fs	<-74 dBfs
Flatness (relative to 1 kHz, at full s	scale):	Residual Response with	<-76 dBfs
<29 kHz	$\pm 1\%(\pm 0.09 \text{ dB})$	No Input:	
<00 KHZ	>100 mV range	* 5 mV range degrades 6 dB.	
<00 KHZ	$\pm 5\%$ (± 0.42 dB) 5 mV to 100 mV range	Crosstalk:	<-80 dBfs (typical)
Amplitude Resolution:	16 bits, less 5.5 dB over-range (typical)	(receiving channel source impe grounded, full scale, <10 kHz si ranges within 20 dB)	edance = 50 Ω , low side ignal on other channels, input
Cross-channel Matching (any VT1433B module in the same	mainframe)	Noise (input terminated with 5	ο Ω, 5 mV range):
Cross-channel Amplitude Match:	+0.1 dB	Noise density above 100 Hz	<70 nV rms/√Hz
(freq > 2x ac HPF corner	freq when ac coupled)	Total rms noise, 10 Hz to 10 kHz	<7 µV rms
	±0.2 dB	Triggering	
(full-scale signal, input ranges equ	ial)	Trigger Detection:	Digital
		Trigger Modes:	Input, external, source, TTLTRG, software, RPM (requires option AYF)
		Maximum Trigger Delay (8 char	nnels active):
		Pre-trigger delay Post-trigger delay	2 MSa (32 MB RAM) 16 MSa

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8-channel 196 kSa/s Digitizer plus DSP

Option 1D4 Arbitary Source Speci	fications	Shutdown:	
General		Shutdown input	
Output Modes:	Sine and pseudo	Shutdown time	<5 s
	random with burst; arbitrary waveform	Shutdown time, ac fail	4 ms
Frequency Bands	with continuous output	Sine Output Mode	
Trequency Bunus.		Sine Frequency (65536 Hz Fs):	
Sine, Noise Modes		Frequency range	0 Hz to 25.6 kHz
Reconstruction filter bandwidth DSP data rate (Fs)	0 kHz to 25.6 kHz 48.00 kHz to 65.536 kHz	Frequency resolution	244 µHz
Data word size	16 bits	Amplitude Accuracy:	
Arb Modes		(1 kHz sine wave, into $\geq 200 \Omega$)	
Reconstruction filter bandwidth	0 kHz to 6.4 kHz	10 Vp to 0.158	±0.20 dB (2.3%)
Data word size	20 bits	Vp ranges	
Frequency Accuracy	±0.012% (120 ppm)	0 152 Vp to	+0 40 dB (4 7%)
Signal Output		79 mVp ranges	10.40 00 (4.778)
Number of Output Channels:	1	Flatness (relative to 1 kHz):	±0.5 dB
Maximum Amplitude:	10 Vp nominal	Harmonic and Aliased-harmonic Di	istortion (≥1 kΩ load):
Output Impedance:	<0.5 Ω (typical)	1.0 scale factor,	
Maximum Output Current:	100 mA (typical)	0 10 0.4 KHZ	
Maximum Capacitive Load:	0.01 μF (typical)	2 Vp to 10 Vp range, 0.05 to 1.0 scale factor,	<-70 dBc
Amplitude Control:		0 Hz to 25.6 kHz	
(signal amplitude = range × scale f	factor)	Spurious Responses:	<-60 dB/Vp
Maximum Amplitude:	10 Vp nominal	Constant-Level Output	
Amplitude Ranges:	79 mVp to 10 Vp in 0.375 dB steps	Output Level at 1 kHz: (after 1 second settling, amplitude scale fac	1 Vp (nominal) ctor > 0.001)
Amplitude Scale Factor:	0.0 to 1.0, with 20-bit	Output Impedance:	1.2 kΩ (typical)
	resolution	Flatness:	
Residual Output Noise Voltage: (Freq > 500 Hz)	<500 nV/√ Hz	25 Hz to 5 kHz, amplitude scale factor 0.001 to 1.0	1.13 Vp to 0.50 Vp (+10, -6.0 dB) (typical)
		5 Hz to 20 kHz, amplitude	1.13 Vp to 0.44 Vp
Residual dc Offset:		scale factor 0.01 to 1.0	(+10, -7.0 dB) (typical)
Offset after autozero	±2 mV	5 Hz to 20 kHz, amplitude	1 13 Vn to 0 88 Vn
Offset after shutdown	±20 mV	scale factor 0.1 to 1.0	(±1.0 dB) (typical)
Zeroing resolution	100 μV	Sine Wave Distortion: (at 1 kHz, amplitude scale factor 0.1 to 1.0)	-40 dBc (typical)
Output Overload Trip:	>17 V	Residual dc Offset:	<5 mV (typical)
Amplitude Ramp-down Time:	0 s to 30 s (Programmable)		.,,,



8-channel 196 kSa/s Digitizer plus DSP

Option AYF Tachometer Input Specifications

Option AYF, Tachometer Input, provides two tachometer inputs. When this option is installed, two of the three SMB connectors on the VXI module are used for tachometer inputs. When this option is not installed, these connectors are normally used for "External Sample" and "Trigger."Each tachometer input has a programmable trigger level.

Each tach pulse causes a "Tach Edge Time" to be recorded in a 16384-word FIFO. A "Tach Edge Time" is the instantaneous value of the 32-bit "Tach Counter." A "Decimate" number can be set to ignore a number of tach pulses before recording each Tach Edge Time. A "Holdoff" time can be set to avoid false triggering due to ringing.

One of the tachometer inputs can be programmed for use as a trigger input instead. In this mode, the tachometer option can trigger the system and measure the time between the trigger and the next sample clock edge.

The analog signal from either of the tachometer inputs can be routed to an input channel using the internal calibration path.

General	
Tach Counter:	32-bit counter with roll-over detector bit
Decimate Counter:	16-bit counter
Input Signal Trigger Level (typical): Voltage Range	-25 V to +25 V
Resolution, levels $<\pm 5$ V	40 mV
Resolution, levels $>\pm$ 5 V	200 mV
Hysteresis, levels <± 5 V	0 to 250 mV
Hysteresis, levels >± 5 V	0 to 1.25 mV Slope Programmable, positive or negative
Input Signal Timing: Minimum pulse width	5 µs
Maximum pulse rate	100 kHz
Trigger holdoff	1 to 65536 clock periods
Input Impedance:	20 kΩ (typical)

VXI System Level Specifications

Features

VXI Standard Information:

Conforms to VXI Revision 1.4 C-size, single slot, register-based programming, "Slave" Data Transfer Bus functionality, A24 address capability, D32 data capability, Optional Local Bus capability, SUMBUS driver and receiver. Requires two or four TLTRG lines for multi-module synchronization

Software

Driver Type:	VXIplug&play C libraries with source code and ME4X ActiveX driver
Supported Operating Systems:	MS Windows, Linux, HP-UX
Plug&Play Compliance:	MS Windows, Linux, HP-UX
Regulatory Compliance	
Safety Standards:	Designed for compliance to: UL 1244, 4th Edition IEC 348, 2nd Edition,
1978	CSA C22.2, No. 231
Electrostatic Discharge:	Tested for compliance to the European Economic Area's EMC directive
Radiated Immunity:	Tested for compliance to the European Economic

Area's EMC directive



8-channel 196 kSa/s Digitizer plus DSP

Environmental

Operating Restrictions:	
AmbientTemperature	0 °C to 50 °C
Humidity, Non-condensing	20% RH to 90% RH at 40 °C
Maximum Altitude	4600 meters (15,000 feet)
Storage and Transport Restrictions:	
AmbientTemperature	-20 °C to 65 °C
Humidity, Non-condensing	20% RH to 90% RH at 40 °C
Maximum Altitude	4600 meters (15.000 feet)

Ordering Information

		1
VT1433B	8-channel 196 kSa/s Digitizer plus DSP	
VT1433B-1D1	Real time octave measurements	
VT1433B-1D4	Arbitrary source	
VT1433B-1DL	Four input channel configuration	
VT1433B-AYF	Add tachometer input	
VT1433B-UGV	Add local bus interface	
VT3240A	Voltage input breakout box (8 channels)	4
VT3241A	IEPE/voltage input breakout box (8 channels)	C C C
VT3242A	Charge/IEPE/voltage input Breakout Box (4 channels)	
VT3243A	Microphone/IEPE/voltage input breakout box (4 channels)	
VT3241-AXM	Dual rackmount kit for VT3240A or VT3241A	
VT3241-AXN	Rack mount kit for 8 VT3240A or VT3241A BoBs	
VT3242-AXM	Dual rackmount kit for VT3242A or VT3243A	



8-16 channel 102.4 kSa/s 24-bit Digitizer plus DSP with Built-in IEPE Conditioning

N verview

The VXI Technology VT1435/36 digitizers are C-size, single-slot, register-based VXI modules that include DSP, transducer signal conditioning, alias protection, digitization, and high-speed measurement computation. You can even add an optional arbitrary source or dual-input tachometer. On-board computation of measurement results, fast data transfer to the host computer, and a dedicated highspeed data bus for module-to-module communication, all combine to provide outstanding measurement architecture for demanding mechanical, acoustic and electrical test applications. Putting so much capability in a single module decreases system cost while increasing system performance.

The VT1435 has eight front panel high density SMB connectors for signal input and the VT1436 has sixteen. On-board digital signal processing and 32 MB of RAM maximizes total system performance and flexibility.

New redesigned 24 bit digitizer input combined with the largest number of input ranges allows the VT1435/36 to operate in the most optimum measurement range. Even low sensitivity/low output level transducers work well with the VT1435/36. The high performance floating point DSP used for the linear phase FIR anti-alias filters is also user programmable with TI's Code Composer Studio. Standard JTAG interface included to ease control to this DSP. The FIR anti-alias filter vastly improves the phase accuracy of all channels relative to the tachometer, trigger, and other channels.

Specifications

Frequency

Sampling Rate: Maximum	102.4 kSa/s
Minimum	2 Sa/s

Decimate by 5 and 2 filters provide lower sample rate settings. External sampling allows continuous settings from 40.96 kSa/s to 102.4 kSa/s.

Frequency Bandwidth: Maximum	46 kHz
Minimum Resolution	244 µHz
FFT Block Size (samples)	32 to 8192



Features

8 input ranges, including a 100 mV range, allow use of low sensitivity transducers

True balanced differential inputs

Integrated IEPE transducer signal conditioning

On-board user-programmable DSP greatly improves total system performance

User programmable digital anti-alias filters with API controllable FIR and Bessel filter

FIR digital anti-alias filter provides linear phase response for accurate single and cross channel measurements

Optional TEDS Support

Optional arbitrary source or dual input tachometer

32 MB on-card FIFO memory plus optional local bus allows data records up to 146 MB with the VT2216A VXI data disk, larger data files to external SCSI disks



8-16 channel 102.4 kSa/s 24-bit Digitizer plus DSP with Built-in IEPE Conditioning

Input

Number	r of Channels: VT1436	16	Amplitud
	VT1435	8	Flatness
Full Sca Ranges:	le Input (in volts peak)	100 mV, 200 mV, 500 mV 1 V , 2 V, 5 V, 10 V, 20 V Add 23% to include	Amplitud
		over-range capability.	Cross C (any VT143
Input Im	Differential Either side-to-chassis	1 MΩ nominal 500 kΩ, 35 pF nominal	Cross Ch (full-scale
ac Coup	ling 3 dB Corner Freq:	<1 Hz	Cross Ch At 1 kHz
Commo	n Mode Rejection Ratio: dc coupled, dc to 1 kHz	>70 dB	Phase M
	ac coupled, 40 Hz to 1 kHz	>60 dB	Dynam
	Maximum signal, either side-to-chassis	±20 Vp	Spurious (includes s alias produ
Amplitu	de Over-Range Detection: Over-range indication after Common mode overload	±22.5 V (typical)	Aliased F Crosstal
	Differential overload	130% of range	Trigger
	Over Voltage Protection	42 Vp	Trigger D
Residua	l dc:	<±3 mV	Trigger N
TEDS (T	ransducer Electronic Data S READ	Sheet): Basic, Standard, and	Arbitrary
		Extended	Genera
	WRITE	User Area	Output N
IEPE Inp	outs (Available at each inpu Open Circuit Voltage	t): 24 V nominal	translatic
	IEPE Current	4 ma nominal	Frequenc
		5.2 ma max	Sine, No
	Software Controlled	On/Off	

Amplitude

Amplitude Accuracy at 1 kHz:	±0.06 dB
Flatness (relative to 1 kHz, at full so dc to 46 kHz	cale): ±0.01 dB
Amplitude Resolution:	24 bits
Cross Channel Match (any VT1435/36 module in the same mainfr	ame)
Cross Channel Amplitude Match: (full-scale signal, input ranges equal, freq	±0.01 dB uency above 10 Hz if ac coupled)
Cross Channel Phase Match: At 1 kHz	<±0.1 deg
Phase Match Relative to Tach:	<±0.1 deg (typical)
Dynamic Range	
Spurious Free Dynamic Range: (includes spurs, harmonic distortion, inter alias products)	-112 dBfs (typical) modulation distortion,
Aliased Responses:	<-115 dB (typical)
Crosstalk:	<-90 dBfs (typical)
Trigger	
Trigger Detection:	Digital
Trigger Modes:	Input, external, source, TTL TRG, RPM (with opt AYF)
Arbitrary Source Option 1D4 Speci	fications
General	
Output Modes Sine and pseudo ra translation, arbitrary waveform with	ndom with burst and band h loop or continuous output
Frequency Bandwidth	
Sine, Noise Modes: Reconstruction filter bandwidth	0 Hz to 25.6 kHz

Sine, No	ise Modes: Reconstruction filter bandwidth	0 Hz to 25.6 kHz
	DSP data rate (Fs)	48.00 kHz to 65.536 kHz
	Data word size	16 bits



8-16 channel 102.4 kSa/s 24-bit Digitizer plus DSP with Built-in IEPE Conditioning

Arb mo	des:		lachom	eter Input Uption AYF Spec	ITICATIONS
	Reconstruction filter bandwidth	0 Hz to 6.4 kHz	Genera	al	
	Data word size	20 bits	Option AYF, Tachometer Input, provides two tachomet inputs. When this option is installed, two of the three		ides two tachometer d, two of the three
Signal C	Dutput Number of Output Channels	1	SMB co tachome connect	nnectors at the top of the V eter inputs. When this optio cors are normally used for " r" Each tachometer input ha	XI module are used for n is not installed, these External Sample" and
	Maximum Amplitude	10 Vp nominal	trigger l to be re	level. Each tach pulse cause corded in a 16384-word FIF	os a "Tach Edge Time" O. A "Tach Edge Time"
	Output Impedance	<0.5 Ω (typical)	is the in	stantaneous value of the 32	2-bit "Tach Counter". A
	Maximum Output Current	100 mA (typical)	pulses t time car	before recording each Tach E n be set to avoid false trigg	Edge Time. A "Holdoff" ering due to ringing.
	Maximum Capacitive Load	0.01 μF (typical)	One of t as a trig	the tachometer inputs can b ger input rather than a tach	be programmed for use nometer input. In this
Amplitu (signal an	litude Control: m l amplitude = range x scale factor) cl		mode, the tachometer option can trigger the system and measure the time between the trigger and the next sample clock edge. The analog signal from either of the tachomete inputs can be routed to an input channel using the internal		
	Maximum amplitude	10 Vp nominal	calibrati	ion path.	
	Amplitude ranges	79 mVp to 10 Vp in 0.375 dB steps	Tach Co	unter:	32-bit counter with roll-
	Amplitude scale factor	0.0 to 1.0, with 20-bit resolution	Decima	te Counter:	16-bit counter
Residua	I dc Offset: Offset after autozero	±2 mV	Input Si	ignal Trigger Level (typical) : Voltage Range	-25 V to +25 V
	Offset after shutdown	±20 mV		Resolution, levels $<\pm 5$ V	40 mV
	Zeroing resolution	100 µV		Resolution, levels $>\pm 5$ V	200 mV
Output	Overload Trip:	>17 V		Hysteresis	Programmable, 0 V to 250 mV
Amplitu	de Ramp-down Time:	0 s to 30 s (Programmable)		Slope	Programmable,
Shutdov	wn: Shutdown input	TTL levels	Innut C		positive or negative
	Shutdown time	< 5 s	input Si	Minimum pulse width	5 µs
	Shutdown time, ac fail	< 4 ms		Maximum pulse rate	100 kHz
				Trigger hold off	1 to 65536 clock periods

Input Impedance 20 kΩ (typical)



8-16 channel 102.4 kSa/s 24-bit Digitizer plus DSP with Built-in IEPE Conditioning

VXI System Level Features

VXI Standard Information:

Conforms to VXI revision 1.4 C-size, single slot width, register-based programming, "Slave" Data Transfer Bus functionality, A24 address capability, D32 data capability Optional Local Bus capability, SUMBUS driver and receiver. Requires 2 or 4TTLTRG lines for multi-module synchronization.

Software

Driver Type:

Supported Operating Systems:

Plug&Play Compliance:

VXIplug&play C libraries with source code and ME4X ActiveX driver

MS Windows, Linux, HP-UX

MS Windows, Linux, HP-UX

Ordering Information

VT1435	8-channel 102.4 kSa/s digitizer with DSP
VT1435-1D4	Arbitrary source
VT1435-AYF	Add dual tachometer input
VT1435-UGV	Add local bus interface
VT1435-UK6	Commercial cal. certificate w/test data
VT1435-TEDS	Add TEDS support to VT1435
VT1436	16-channel 102.4 kSa/s digitizer with DSP
VT1436-1D4	Arbitrary Source
VT1436-AYF	Add tachometer input
VT1436-UGV	Add local bus interface
VT1436-UK6	Commercial cal. certificate w/test data
VT1436-TEDS	Add TEDS support to VT1436
56-0120-000	12" SMB to BNC jack coax cables
56-0121-000	60" SMB to BNC plug coax cables

-VT1435/1436

VT1434A



4-channel 25.6 kHz Arbitrary Source

N verview

The VXI Technology VT1434A four-channel arbitrary source is a C-size, single-slot, VXI module that provides stimulus for mechanical, acoustical, and electrical testing. Its versatile waveform types, performance, and tight integration with the VT1432B and VT1433B digitizers make it the ideal source for multi-channel measurements. Built-in sine and random noise waveforms save development time and offload computation and data movement chores from the host computer.

The VT1434A may contain one or two 2-channel source assemblies so that the module may have a total of up to four outputs. In addition, if option 1D4 is installed, it provides one additional output for a total of five output channels.

This intelligent module provides arbitrary waveform output capability with both loop mode and continuous arbitrary waveforms, using dynamic updating of data.

Specifications

General

Output Modes:

Sine, burst sine, pseudo random noise, with burst and band translation. Arbitrary waveform with loop or continuous output and burst

Operating Modes

16-Bit Mode:

Number of 2, 4, or 5 channels

Maximum 25.6 kHz signal frequency

Output data 48.00 kHz to 65.536 kHz rate (Fs)

20-Bit Mode: Number of

1 or 2, 3 with optional source

Maximum 6.4 kHz signal frequency

Output data 12.00 kHz to 16.384 kHz rate (Fs)

Frequency Accuracy

channels

±0.012% (120 ppm)



Features

2 or 4 output channels (optional fifth channel)

Sine, random, burst sine, burst random, and continuous arbitrary waveform

Image-rejected output bandwidth: 0 kHz- 25.6 kHz for 16 bits, 0 kHz - 6.4 kHz for 20 bits

Full scale output ranges: 80 mV to 10 V

Constant output level amplifier (COLA) for monitoring output signals

Shutdown input allows emergency ramp-down of outputs



4-channel 25.6 kHz Arbitrary Source

>90% (typical)

Signal Output Number of Output Channels: 2, 4, or 5, depending on option selected **Maximum Amplitude** 10 Vp nominal **Output Impedance** $<0.5 \Omega$ (typical) Maximum Output Current 100 mA (typical) **Maximum Capacitive Load** 0.01 µF (typical) **Amplitude Control** (signal amplitude = amplitude range × amplitude scale factor) **Maximum Signal Amplitude:** 10 Vp nominal 10 Vp to 79 mVp in **Amplitude Ranges:** 0.375 dB steps 1.0 to 0.0, with 16-bit **Amplitude Scale Factor** or 20-bit resolution Channel-to-channel Crosstalk: (at sine frequency of generating channels, all channels same range) Signal amplitude <-80 dB at ≥1.0 Vp Signal amplitude <-80 dBVp (100 µVp) at <1.0 Vp Amplitude Ramp-down Time: 0 s to 30 s (programmable) Shutdown: Shutdown input signal TTL levels Shutdown time <5 s Shutdown time, ac fail <4 ms

Sine Output Mode

≤25.6 kHz

Sine Fre	equency (65.536 kHz Fs):	
	Frequency range	0 to 25.6 kHz
	Frequency resolution (Sine frequency ≤1 kHz)	244 µHz
	1 kHz < sine frequency ≤10 kHz	2.384 mHz
	10 kHz < sine frequency	6.10 mHz

Amplitude Accuracy: (1 kHz sine wave, ≥200 Ω load) 10 Vp to 0.158 Vp ±0.20 dB (2.3%) ranges		B (2.3%)
0.152 Vp to ranges	79 mVp	±0.40 dB (4.7%)
Flatness (relative to	1 kHz):	±0.5 dB
Channel-to-channel Phase Match at 1 kH	z:	±1.0 deg
Noise Output Mo	des	
Frequency Spans:		25,600 to 0.048828 Hz
Passband Flatness: (Measurement BW >1% o	f span)	<1.2 dB (typical)
Crest factor:		4:1 (typical)

Frequency Band Translation (Zoom): (16 and 20 bit modes):

Percent In-Band Energy:

For Fs=	Maximum Spa	n Maximum Center Frequency
65,536 kHz	5.12 kHz	5.12 kHz
(channels 1 a	nd 3 active, only)	
64,000 kHz	5.00 kHz	5.00 kHz
(channels 1 a	nd 3 active, only)	
51,200 kHz	4.00 kHz	4.00 kHz
48,000 kHz	3.750 kHz	3.750 kHz
40.96 kHz	2.200 kHz	2.200 kHz
Minimum spa	in:	Maximum Span ÷ 2 ¹⁶
Center freque Sine ≤1 k	n cy resolution: frequency Hz	244 µHz
1 kH ≤5 k	z < sine frequency Hz	1.22 mHz

VT1434A



Arbitrary Output Mode

Maximum aignal bandwidth		Coin Common Innut to		
waximum signai bandwidth:	20.0 KF12	Signal Output:	0 ±0.5 dB at 1 kHz	
Buffer size:	40,960 samples x 2 buffers			
Continuous Arb Data Rate	The Noise/Arb Frequency Spans table in the manual gives the continuous rate at which a user must supply data for a given span.	Input Impedance:	> 10 kΩ (typical)	
		Flatness, dc to 25.6 kHz:	±0.5 dB (typical)	
		Sine Wave Distortion:	-80 dBc (typical)	
		Residual dc Offset:	1 mV (typical)	
Constant Level Output		VXI System Lovel Features		
	1) (VAL OYSIGIII LOVGI IGUIUIGS		
(after 1 second settling, amplitude scale factor is > 0.001)		VXI Standard Information:	Register-based programming, "Slave" Data	
Output Impedance:	1.2 kΩ (typical)		Transfer Bus functionality, A24 address capability,	
Flatness:			D32 data capability,	
25 Hz to 5 kHz, amplitude	1.13 Vp to 0.50 Vp		Optional Local Bus	
scale factor 0.001 to 1.0	+10, -6.0 dB (typical)		capability, SUMBUS driver and receiver.	
5 Hz to 20 kHz, amplitude	1.13 Vp to 0.44 Vp		Requires 2 or 4TTLTRG	
scale factor 0.01 to 1.0	(+10, -7.0 dB) (typical)		lines for multi-module synchronization	
5 Hz to 20 kHz, amplitude	1.13 Vp to 0.88 Vp	0.4		
scale factor 0.1 to 1.0	(±1.0 dB) (typical)	Sonware		
Sine Wave Distortion:	-40 dBc (typical)	Driver Type:	VXIplug&play C libraries with source code and ME4x	
(at 1 kHz, amplitude scale factor 0.1 to 1.0)			ActiveX driver	
Residual dc Offset :	<5 mV (typical)	Supported Operating	MS Windows, Linux, HP-UX	
Summer Input:	(optional 5th channel only)	Systems:		
		Plug&Play Compliance:	MS Windows, Linux, HP-UX	

Maximum Input:

Ordering Information

Level 10 Vp

VT1434A	4-channel 65 kSa/s Arbitrary Source
VT1434A-1D4	Add 5 th Arbitrary Source Channel
VT1434A-1DM	2-channel Configuration
VT1434A-ANC	32 MB total RAM
VT1434A-ANM	4 MB total RAM
VT1434U-1D4	Arbitrary Source Upgrade





VT2216A

VXI/SCSI Interface Module with Optional Data Disks

Nverview

Capture high-speed data directly from VXI digitizers

This C-size double-slot VXI module is a high-speed dual SCSI interface with optional internal disks that is optimized for online recording of digital data to disk. It is ideal in a variety of data capture applications, including both dynamic and static signal acquisition. It fits applications in transient signal analysis, in acoustic and mechanical measurements, as well as electronic surveillance.

Available in three configurations

The standard configuration consists of a dual low voltage differential/single-ended SCSI interface and is intended for applications using external SCSI storage devices. Data from the VXI backplane or local bus can be transferred directly to the external device without involving the VXI Slot 0 Controller.

The two optional configurations provide a single 73 GB internal disk or two 73 GB internal disks. These disks provide a compact high-speed solution for on-line recording. The SCSI interface can still be used for external readBack or disk backup with external SCSI DAT tape drives.

Sustained data throughput to internal disks at 30 MB/s

There is no need to accept gaps or missing samples in your high-speed transient digital data capture applications. Using the VXI local bus, data can be transferred from VXI ADC modules to the dual disk VT2216A-012 at a real time, sustained rate of more than 30 MB/s without losing a single byte of data. With over 140 GB of disc storage, data can be written to the disk at this rate for over one hour.

Simultaneously monitor data while recording to disk

In cases where it is also necessary to monitor the local bus data as it is being written to disk, some (or all) of the data can be transferred to the VXIbus for monitoring by the host computer. The effect of monitoring the data on the overall local bus transfer rate is very small; however, there is a 2 MB/s limit on the data rate of the monitored data (using D16 transfers to shared memory).

Consequently, if the monitoring data rate doesn't exceed the shared memory rate, then the effect of data monitoring on the data recording rate to disk is not significant.





On-line recording of digitized signals

Fast, continuous throughput to disk

Two Low voltage differential SCSI interfaces

Optional internal 73 GB or dual 73 GB hard drives

>30 MB/s data transfer rate to dual internal drives





VT2216A

VXI/SCSI Interface Module with Optional Data Disks

The amount of data that can be monitored is dependent upon the amount of shared memory available.

Connect external SCSI devices for fast data export

In other applications, data can also be transferred from A/D modules via the local bus to external, fast, wide differential SCSI devices at the rate of 15 MB/s on each of the two SCSI interfaces, simultaneously.

Backup internal disk data

In the VT2216A-012 dual disk configuration, on-line data can be written to one disc while the host computer starts backing up the second disk to an external DAT drive using the second SCSI interface (requires a cable connection between the DAT SCSI interface and the VT2216A front panel connector).

If the VT2216A module is not busy writing on-line data then data stored on the optional internal disks can also be backed up using the host computer by transferring the data via the VXIbus.

Use either local bus or VXIbus data transfers

If you use VXI input modules without local bus support, data can be transferred to the SCSI module over the VXI backplane. These transfers can take place at a maximum rate of 5 MB/s (D32). For example, nine VT1413C 64-channel modules can be simultaneously writing data to the VT2216A providing 576 channels scanned every 1 ms, without losing any samples.

One can also monitor data while recording it to the VT2216A optional disk when local bus transfers are not involved.

In this case, the data is being transferred via the VXIbus to both the disk and shared memory. If the amount of data monitored is small compared to the overall amount of data being written to disk, then the throughput rate to disk is not significantly compromised.

If all of the data is being monitored then the overall effect of monitoring while recording is a factor of two in performance. This factor of two in performance arises because the same bus is being used to transfer the data to disk as well as sending the data to shared memory for monitoring by the host.

Use both local and VXIbus data transfers simultaneously

The VT2216A can also simultaneously acquire data from both local bus modules and interleave this data stream with modules that only use the VXIbus for data transfers. An example would include a measurement situation where several VT1432B (16-ch 102.4 kHz Digitizer) modules sending their data over the local bus are mixed with several VT1413C (64-ch Scanning A/D) modules producing data on the VXlbus. Data monitoring can also take place in these mixed local bus/ VXlbus data recording sessions.

Replace analog tape recorders in many applications

Analog tape recorders have traditionally been used to record signals so that different data analysis processes can be performed off-line, on the same data or simply to archive raw data for some future use.

Writing digitized data to disk provides more dynamic range than that available on analog tape recorders. Tape recorders (both analog and digital) are serial devices which requires the tape to be rewound each time the data is to be reused. Recording the data on the VT2216A optional internal disks provides rapid, random access to any segment of the data. The data can also be backed up to external DAT tape for long term archival storage.

Comprehensive software support

This VXI/SCSI interface module is a message based VXI module with a Plug&Play driver and a SCPI interpreter. This allows software packages like NI LabVIEW or Agilent VEE an easy way to setup the VT2216A module.

This module's command set allows the user a relatively simple, straight forward interface for programming the module. The complexity of managing the data flow from multiple VXI input modules to multiple disks has been reduced to typically less than a dozen SCPI commands with parameters. This programming command set manages the data transfer for applications using external SCSI devices or the optional internal 73 GB hard drives

Additional software support

The module is also supported by a set of C example programs for use by an embedded VXI host computer (HP-UX or MS Windows®), a host computer connection via the MXI-2 interface or FireWire (IEEE-1394).

For applications needing to manage reading and writing of multiple files on the disk(s), a LIF file system software package is available. Two versions of the LIF file system are available, one is a shared library for HP-UX and one is for MS Windows in the form of a DLL (dynamic link library).

In addition, LIF Express software allows high speed backup of LIF data files via the SCSI bus.

Specifications

See manual for a complete list of specifications.

VT2216A

VXI Technology™

VXI/SCSI Interface Module with Optional Data Disks





Online at vxitech.com