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Find the *Ametek / VTI Instruments / VXI Technology VT1432B* at our website: ***Click HERE***

VT1432A

4-16 Channel 51.2 ksa/s digitizer plus DSP

- On-board DSP greatly improves total system performance
- Built-in signal conditioning simplifies tests and reduces cost
- Anti-alias protection from 10 Hz to 23 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



Overview

The VXI Technology VT1432A 16 channel digitizer is a C-size, one-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 VT1432A may contain up to four 4-channel input assemblies so that the module may have a total of up to 16 inputs. Onboard digital signal processing and 32 Mbytes of RAM maximizes total system performance and flexibility.

Specifications

Input

Full Scale Input Ranges (in volts peak): 100 mV, 200 mV, 500 mV, 1V, 2V, 5V, 10V, 20V[3] Add 23% to include over-range capability.

[3] The 20V range is not specified for dynamic range

Maximum Input Level: 42 Vp

Input Impedance:
(dc coupled or ac coupled above 10 Hz)

Differential	1 MΩ nominal
Either side-to-chassis	500 kΩ, 35 pF nominal

Input Resistance (measured at dc while ac coupled):

Either side-to-chassis	350 kΩ nominal

AC Coupling 3 dB Corner Frequency: < 1 Hz

Common Mode Rejection Ratio:

dc coupled, dc to 1 kHz	> 50 dB
ac coupled, 40 Hz to 1 kHz	> 45 dB
Maximum signal, either side-to-chassis	± 20 Vpk

Amplitude Over-Range Detection:
Over-range indication after:

Common mode overload	± 22.5V (typical)
Differential overload	± 130% of range (typical)
Residual DC	± 1% of range, ±10 mV

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Frequency

Bandwidth (Hz)1	Sample Rate (samples/ second)	Bandwidth (Hz)1	Sample Rate (samples/second)
23000[2]	51200	488.2813	1250
20000	51200	468.75	1200
19531.25	50000	400	1024
18750	48000	390.625	1000
16000	40960	320	819.2
15625	40000	312.5	800
12800	32768	305.1758	781.25
10000	25600	292.9688	750
9765.625	25000	250	640
9375	24000	244.1406	625
8000	20480	234.375	600
7812.5	20000	200	512
6400	16384	195.3125	500
5000	12800	160	409.6
4882.8125	12500	156.25	400
4687.5	12000	152.5879	390.625
4000	10240	146.4844	375
3906.25	10000	125	320
3750	9600	122.07031	312.5
3200	8192	117.1875	300
3125	8000	100	256
2560	6553.6	97.65625	250
2500	6400	80	~ 204.8
2441.4063	6250	78.125	200
2343.75	6000	76.293945	195.3125
2000	5120	73.242188	187.5
1953.125	5000	62.5	160
1875	4800	61.035156	156. 25
1600	4096	58.59375	150
1562.5	4000	50	128
1280	3276.8	48.828125	125
1250	3200	40	102.4
1220.7031	3125	31.25	80
1171.875	3000	30.517578	78.125
1000	2560	29.296875	75
976.5625	2500	25	64
937.5	2400	24.414063	62.5
800	2048	20	51.2
781.25	2000	15.625	40
640	1638.4	15.258789	39.0625
625	1600	14.648438	37.5
610.3516	1562.5	12.5	32
585.9375	1500	12.207031	31.25
500	1280	10	25.6

Frequency Accuracy: ± 0.012% (120 ppm)

1 Bandwidth is 400 lines of 512 line FFT spectrum unless noted otherwise.

2 Bandwidth is 460 lines of 512 line FFT spectrum.

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Amplitude

Amplitude Accuracy at 1 kHz ± 0.7% of reading, ± 0.01% of full scale4

[4] The minimum frequency span for any Fs has an amplitude accuracy of 2.5% of reading

Flatness (relative to 1 kHz, at full scale): ± 1% (0.09 dB)

Amplitude Resolution: 16 bits, less 2.3 dB over-range

Cross Channel Matching (any VT1432A module in the same mainframe)

Cross Channel Amplitude Match: ± 0.1 dB
(full-scale signal, input ranges equal, frequency above 10 Hz if ac coupled)

Cross Channel Phase Match:
(full-scale signal, input ranges equal)

20 kHz	± 2.5° (or ± 350 ns)
FHZ = 800 Hz to 20 kHz	± (FHZ × 125 × 10-6)°
100 Hz to 800 Hz	± 0.1°
dc to 100 Hz, dc couple	± 0.1°
50 Hz to 100 Hz, ac couple	± 0.2°

Dynamic Range

Resolution: 16 bits

Spurious Free < -80 dBfs (0.01%fs),

Dynamic Range: -90dBfs (typical)
(includes spurs, harmonic distortion, intermodulation distortion, alias products)
(source impedance = 50Ω)

Spurious and Residual Responses: < -80 dBfs

Harmonic Distortion: < -80 dBfs, -90 dBfs (typical)

Aliased Responses: < -80 dBfs
(≤ 0 dBfs, ≤ 1 MHz)

Crosstalk: < -80 dBfs (typical)
(receiving channel source impedance = 50Ω, low side grounded, full scale, < 10 kHz signal on other channels, input ranges within 20 dB)

Noise:
(input terminated with 50Ω, 100 mV range)

Noise density above 100 Hz	< 300 nVrms/√Hz
Noise density at 10 Hz	< 1000 nVrms/√Hz
Total rms noise, 23 kHz span	< 45 µVrms

Trigger

Trigger Detection: Digital

Trigger Modes: Input, external, source, TTL, TRG, RPM (requires option AYF)

Option 1D4 Arbitrary Source

Specifications

General

Output Modes Sine and pseudo random with burst and band translation, arbitrary waveform with loop or continuous output

Frequency Bands

Sine, noise modes:

Reconstruction filter bandwidth	0 to 25.6 kHz
DSP data rate (Fs)	48.00 kHz to 65.536 kHz
Data word size	16 bits

Arb modes:

Reconstruction filter bandwidth	0 to 6.4 kHz
Data word size	20 bits

Frequency Accuracy: ± 0.012% (120 ppm)

Signal Output

Number of Output Channels: 1

Maximum Amplitude: 10 Vp nominal

Output Impedance: < 0.5Ω (typical)

Maximum Output Current: 100 mA (typical)

Maximum Capacitive Load: 0.01 µF (typical)

Amplitude Control:
(signal amplitude = range × scale factor)

Maximum amplitude	10 Vp nominal
Amplitude ranges	79 mVp to 10 Vp in 0.375 dB steps
Amplitude scale factor resolution	0.0 to 1.0, with 20-bit

Residual Output Noise Voltage(Freq > 500 Hz): < 500 nV/√Hz

Residual DC Offset:

Offset after autozero	± 2 mV
Offset after shutdown	± 20 mV
Zeroing resolution	100 µV

Output Overload Trip: > 17V

Amplitude Ramp-down Time: 0 to 30 seconds
(Programmable)

Shutdown:

Shutdown input	TTL levels
Shutdown time	< 5s
Shutdown time, ac fail	< 4 ms

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Sine Output Mode

Sine Frequency (65536 Hz Fs):

Frequency range	0 to 25.6 kHz
Frequency resolution	244 µHz

Amplitude Accuracy:
(1 kHz sine wave, into ≥ 200Ω)

10 Vp to 0.158 Vp ranges	± 0.20 dB (2.3%)
0.152 Vp to 79 mVp ranges	± 0.40 dB (4.7%)

Flatness (relative to 1 kHz): ± 0.5 dB

Harmonic and Aliased-harmonic Distortion(≥ 1 kΩ load)**:**

1 Vp range, 1.0 scale factor, 0 to 6.4 kH	< -80 dBc
2 to 10 Vp range, 0.05 to 1.0 scale factor, 0 to 25.6 kHz	< -70 dBc

Spurious responses < -60 dBVp

Constant Level Output

Output Level at 1 kHz: (after 1 second settling, amplitude scale factor > 0.001) 1 Vp (nominal)

Output Impedance: 1.2 kΩ (typical)

Flatness:

25 Hz to 5 kH, 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 scale factor 0.01 to 1.0	1.13 Vp to 0.44 Vp (+10, -7.0 dB) (typical)
5 Hz to 20 kHz, amplitude scale factor 0.1 to 1.0	1.13 Vp to 0.88 Vp (±1.0 dB) (typical)

Sine Wave Distortion: (at 1 kHz, amplitude scale factor 0.1 to 1.0) -40 dBc (typical)

Residual dc Offset < 5 mV (typical)

Summer Input

Maximum Input Level 10 Vp

Gain, Summer Input to Signal Output: 0 ± 0.5 dB at 1 kHz

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)

Option AYF Tachometer Input

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 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 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	-25V to +25V
Resolution, levels < ± 5V	40 mV
Resolution, levels > ± 5V	200 mV
Hysteresis	Programmable, 0 to 250 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

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 4 TTLTRG_ lines for multi-module synchronization

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Software Drivers

Driver Type:	C libraries with source code
Supported Operating Systems:	HP-UX 10.20, Windows
Supply Media:	CD-ROM
Plug & Play Compliance:	C libraries support the Plug & Play standard for HP-UX, MS Windows®

HP-UX 10.X for HP 9000 Series 700 and 800 computers are X/Open Company UNIX 93 branded products.

MS Windows are U.S. registered trademarks of Microsoft Corporation.

Environmental

Operating Restrictions

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

Storage and Transport Restrictions

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

Ordering Information

16 Chan 51.2 kSa/sec Digitizer Plus DSP	VT1432A
Arbitrary source	VT1432A-1D4
Four Input Channel Configuration	VT1432A-1DD
Eight Input Channel Configuration	VT1432A-1DE
Sixteen input RMS-peak hold channel	VT1432A-204
Add tachometer input	VT1432A-AYF
Add local bus interface	VT1432A-UGV

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