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Find the *Ametek / VTI Instruments / VXI Technology VT1433B* at our website: ***Click HERE***

VT1433B



8-channel 196 kSa/s Digitizer plus DSP

Features

- 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

Overview

The VXI Technology 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. 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 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 ac coupled above 10 Hz)	
Differential	2 MΩ 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)

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8-channel 196 kSa/s Digitizer plus DSP

Amplitude Over-Range Detection:

Common mode overload	±11.5 Vp (typical)
Differential mode overload (dc coupled)	105% of full scale

Frequency:

Sample rate	196,608 to .15 Sa/Sec
Bandwidth	88,320.001 to 0.06 Hz

Frequency Accuracy: ±0.012% (120 ppm)

Differential Mode Overload (ac coupled):

for cutoff frequency ≤6 Hz	100% of full scale
for cutoff frequency >6 Hz	50% of full scale, worst case

Residual dc 1% of full scale +2 mV

Amplitude

Amplitude Accuracy at 1 kHz: ±0.5% of reading, ±0.01% of full scale

Flatness (relative to 1 kHz, at full scale):

<29 kHz	±1%(±0.09 dB)
<88 kHz	±2% (±0.17 dB) for >100 mV range
<88 kHz	±5% (±0.42 dB) 5 mV to 100 mV range

Amplitude Resolution: 16 bits, less 5.5 dB over-range (typical)

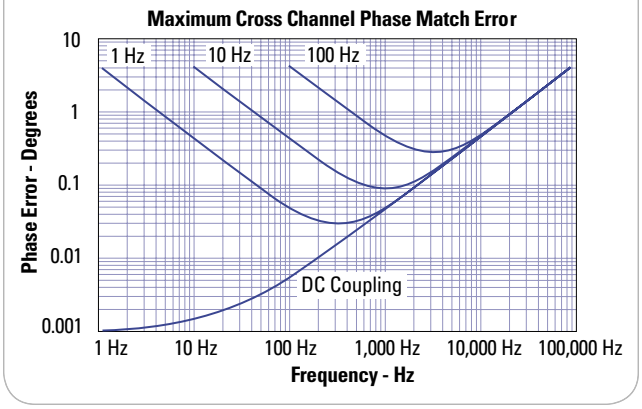
Cross-channel Matching

(any VT1433B module in the same mainframe)

Cross-channel Amplitude Match:

up to 29 kHz	±0.1 dB
(freq > 2x ac HPF corner freq when ac coupled)	
29 kHz to 88 kHz	±0.2 dB

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



Dynamic Range

Resolution: 16 bits

Spurious-Free Dynamic Range*:
(includes spurs, harmonic distortion, intermodulation distortion, alias products and sidebands >300 Hz)
(source impedance = 50 Ω)

51.2 kSa/s Fs, ≤ 1 Vp	<-90 dBfs (typical)
48 kSa/s to 65.536 Sa/s Fs	<-80 dBfs
above 65.536 Sa/s Fs	<-74 dBfs

Residual Response with No Input: <-76 dBfs

* 5 mV range degrades 6 dB.

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

Noise (input terminated with 50 Ω, 5 mV range):

Noise density above 100 Hz	<70 nV rms/√Hz
Total rms noise, 10 Hz to 10 kHz	<7 µV rms

Triggering

Trigger Detection: Digital

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

Maximum Trigger Delay (8 channels active):

Pre-trigger delay	2 MSa (32 MB RAM)
Post-trigger delay	16 MSa

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Option 1D4 Arbitary Source Specifications

General

Output Modes: Sine and pseudo random with burst; arbitrary waveform with continuous output

Frequency Bands:

Sine, Noise Modes

Reconstruction filter bandwidth	0 kHz 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 kHz 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: <0.5 Ω (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: 0.0 to 1.0, with 20-bit resolution

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: >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

Sine Output Mode

Sine Frequency (65536 Hz Fs):

Frequency range	0 Hz to 25.6 kHz
Frequency resolution	244 µHz

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

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

Spurious Responses: <-60 dB/Vp

Constant-Level Output

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

Output Impedance: 1.2 kΩ (typical)

Flatness:

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

Residual dc Offset: <5 mV (typical)

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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 <± 5 V	40 mV
Resolution, levels >± 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

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Environmental

Operating Restrictions:

Ambient Temperature	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:

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)

Ordering Information

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)
VT3241A	IEPE/voltage input breakout box (8 channels)
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

DSA

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