



## Features

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

### Overview

The VXI Technology 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	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 102.4 kSa/s to 40.96 kSa/s.

##### Frequency Bandwidth

Maximum	46 kHz
Minimum resolution	244 μHz

FFT Block Size (samples): 32 to 8192

#### Input

Number of Channels: 16

Option 1DE: 8

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

**Input Impedance:**  
 Differential 1 M $\Omega$  nominal  
 Either side-to-chassis 500 k $\Omega$ , 35 pF nominal

**ac Coupling 3 dB Corner Freq:** <1 Hz

**Common Mode Rejection Ratio:**  
 dc coupled, dc to 1 kHz >70 dB  
 ac coupled, 40 Hz to 1 kHz >60 dB

Maximum signal, either side-to-chassis  $\pm 20$  Vp

**Amplitude Over-Range Detection:**  
 Over-range indication after Common Mode overload (typical)  $\pm 22.5$  V

Differential overload 130% of range

Over-voltage Protection 42 Vp

**Residual dc:**  $\leq \pm 3$  mV

### Amplitude

**Amplitude Accuracy at 1 kHz:**  $\pm 0.06$  dB

**Flatness (relative to 1 kHz, at full scale):**  
 dc to 46 kHz  $\pm 0.01$  dB

**Amplitude Resolution:** 24 bits

\*16-bits in some ranges for faster data throughputs

### Cross-channel Match (any VT1432B module in the same mainframe)

**Cross-channel Amplitude Match:**  $\pm 0.01$  dB (full-scale signal, Input ranges equal, frequency above 10 Hz if ac coupled)

**Cross-channel Phase Match:**  $\leq \pm 0.1^\circ$  at 1 kHz

**Phase Match Relative to Tach:**  $\leq \pm 0.1^\circ$  (typical)

### Dynamic Range

**Spurious Free Dynamic Range:** -112 dBfs (typical)  
 (includes spurs, harmonic distortion, intermodulation distortion, alias products)

**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

#### General

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

#### Frequency Bandwidth

**Sine, noise 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

**Arb modes:**  
 Reconstruction filter bandwidth 0 Hz to 6.4 kHz  
 Data word size 20 bits

#### Signal Output

Number of Output Channels 1  
 Maximum Amplitude 10 Vp nominal  
 Output Impedance <0.5  $\Omega$  (typical)  
 Maximum Output Current 100 mA (typical)  
 Maximum Capacitive Load 0.01  $\mu$ F (typical)

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

### Amplitude Control:

(signal amplitude = range x 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 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 <±5 V	40 mV
Resolution, levels ≥±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:

VXI plug&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

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

### Environmental

#### 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)

#### 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

VT1432B

<b>VT1432B</b>	16-channel 102.4 kSa/s Digitizer with DSP
<b>VT1432B-1D4</b>	Arbitrary Source
<b>VT1432B-1DE</b>	8-channel 102.4 kSa/s Digitizer with DSP
<b>VT1432B-AYF</b>	Add dual tachometer input
<b>VT1432B-UGV</b>	Add local bus interface
<b>VT1432B-UK6</b>	Commercial cal. Certificate w/test data
<b>VT3240A</b>	Voltage input breakout box (8 channels)
<b>VT3241A</b>	IEPE/voltage input breakout box (8 channels)
<b>VT3242A</b>	Charge/IEPE/voltage input Breakout Box (4 channels)
<b>VT3243A</b>	Microphone/IEPE/voltage input breakout box (4 channels)
<b>VT3241-AXM</b>	Dual rackmount kit for VT3240A or VT3241A
<b>VT3241-AXN</b>	Rack mount kit for 8 VT3240A or VT3241A BoBs
<b>VT3242-AXM</b>	Dual rackmount kit for VT3242A or VT3243A
<b>VT1432U-1432B</b>	Credit for each 1432A returned
<b>VT1432U-1431A</b>	Credit for each 1431A returned
<b>VT1432U-3565</b>	Credit for (2) 35655A, (16) 35652A, 3566A or 3567A

