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VXI Technology™

4-channel 25.6 kHz Arbitrary Source



Overview

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 channels	2, 4, or 5
Maximum signal frequency	25.6 kHz
Output data rate (Fs)	48.00 kHz to 65.536 kHz

20-Bit Mode:

Number of channels	1 or 2, 3 with optional source
Maximum signal frequency	6.4 kHz
Output data rate (Fs)	12.00 kHz to 16.384 kHz
Frequency Accuracy	±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

VT1434A

4-channel 25.6 kHz Arbitrary Source

Signal Output

Number of Output Channels: 2, 4, or 5, depending on option selected

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 = amplitude range × amplitude scale factor)

Maximum Signal Amplitude: 10 Vp nominal

Amplitude Ranges: 10 Vp to 79 mVp in 0.375 dB steps

Amplitude Scale Factor 1.0 to 0.0, with 16-bit or 20-bit resolution

Channel-to-channel Crosstalk:
(at sine frequency of generating channels, all channels same range)

Signal amplitude at ≥1.0 Vp	<-80 dB
Signal amplitude at <1.0 Vp	<-80 dBVp (100 µVp)

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

Sine Frequency (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 ≤25.6 kHz	6.10 mHz

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

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

Channel-to-channel Phase Match at 1 kHz: ±1.0 deg

Noise Output Modes

Frequency Spans: 25,600 to 0.048828 Hz

Passband Flatness: <1.2 dB (typical)
(Measurement BW >1% of span)

Crest factor: 4:1 (typical)

Percent In-Band Energy: >90% (typical)

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

For Fs=	Maximum Span	Maximum Center Frequency
65,536 kHz (channels 1 and 3 active, only)	5.12 kHz	5.12 kHz
64,000 kHz (channels 1 and 3 active, only)	5.00 kHz	5.00 kHz
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 span: Maximum Span ÷ 2^{16}

Center frequency resolution:

Sine frequency ≤1 kHz	244 µHz
1 kHz < sine frequency ≤5 kHz	1.22 mHz

VXI Technology™

4-channel 25.6 kHz Arbitrary Source

Arbitrary Output Mode

Maximum signal bandwidth: 25.6 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.

Constant Level Output

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

Summer Input: (optional 5th channel only)

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)

VXI System Level Features

VXI Standard Information: 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

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

Ordering Information

VT1434A

VT1434A	4-channel 65 kSa/s Arbitrary Source
VT1434A-1D4	Add 5th 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

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