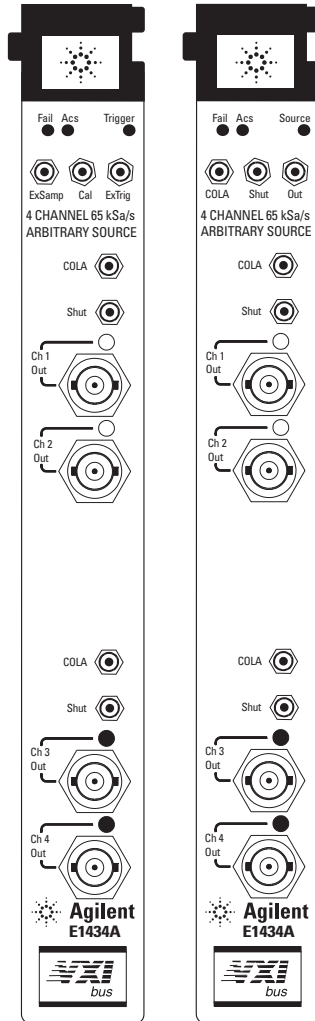
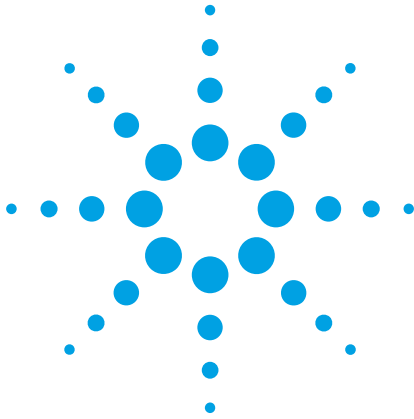


Agilent E1434A

4-Channel 25.6 kHz Arbitrary Source

Technical Specifications



Agilent E1434A

Agilent E1434A
with additional
Arbitrary Source
Option 1D4

The Agilent E1434A 4-Channel 65 kSa/s Arbitrary Source is a C-sized VXI module. It provides a maximum signal data rate of 65,536 samples per second, per channel.

The E1434A 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.



Agilent Technologies

Innovating the HP Way

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)
Signal Output	
Number of Output Channels	2, 4, or 5, depending on option selected
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 (<i>signal amplitude = amplitude range × amplitude scale factor</i>)	
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
Residual Output Noise Voltage	
1 Vp Range, Freq > 500 Hz	< 500 nV/√Hz
Residual DC Offset	
Offset after autozero	± 2 mV
Offset after shutdown	± 20 mV
Channel-to-channel Crosstalk (at sine frequency of generating channels, all channels same range)	
Signal amplitude ≥ 1.0 Vp	< -80 dB
Signal amplitude < 1.0 Vp	< -80 dBVp (100 μVp)
Output Overload Trip	> 17V (typical)
Amplitude Ramp-down Time (programmable)	0 to 30 seconds
Shutdown	
Shutdown input signal	TTL levels
Shutdown time	< 5s
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 \leq 1 kHz	244 μ Hz
1 kHz < sine frequency \leq 10kHz	2.384 mHz
10 kHz < sine frequency \leq 25.6 kHz	6.10 mHz

Amplitude Accuracy

(1 kHz sine wave, \geq 200 Ω load)

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

Flatness (relative to 1 kHz)	\pm 0.5 dB
-------------------------------------	--------------

Harmonic and Aliased-harmonic Distortion

(\geq 1 k Ω load)

1 Vp range, 1.0 scale factor, 0 to 6.4 kHz (20 bit mode)	< -80 dBc
---	-----------

2 to 10 Vp range, 0.05 to 1.0 scale factor, 0 to 25.6 kHz (16-bit mode)	< -70 dBc
--	-----------

Spurious Responses	< -60 dBVp
---------------------------	------------

Channel-to-channel Phase Match at 1 kHz	\pm 1.0 deg
--	---------------

Noise Output Modes

Frequency Spans	see table: Noise/Arb Frequency Spans
------------------------	--------------------------------------

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

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 \div 2¹⁶

Center frequency settibility:

Sine frequency \leq 1 kHz	244 μ Hz
1 kHz < sine frequency \leq 5kHz	1.22 mHz

Noise/Arb Frequency Spans

Mode	Sample Rate (Hz)	Bandwidth (Hz)
16-bit	65536	25600
16-bit	64000	25000
16-bit	51200	20000
16-bit	48000	18750
16-bit	40960	16000
16-bit	32768	12800
16-bit	32000	12500
16-bit	25600	10000
16-bit	24000	9375
16-bit	20480	8000
16,20-bit	16384	6400
16,20-bit	16000	6250
16,20-bit,zoom	13107.2	5120
16,20-bit,zoom	12800	5000
16,20-bit	12000	4687.5
16,20-bit,zoom	10240	4000
16,20-bit,zoom	9600	3750
16,20-bit,zoom	8192	3200
16,20-bit	8000	3125
16,20-bit,zoom	6553.6	2560
16,20-bit,zoom	6400	2500
16,20-bit	6000	2343.75
16,20-bit,zoom	5120	2000
16,20-bit,zoom	4800	1875
16,20-bit,zoom	4096	1600
16,20-bit	4000	1562.5
16,20-bit,zoom	3276.8	1280
16,20-bit,zoom	3200	1250
16,20-bit	3000	1171.875
16,20-bit,zoom	2560	1000
16,20-bit,zoom	2400	937.5
16,20-bit,zoom	2048	800
16,20-bit	2000	781.25
16,20-bit,zoom	1638.4	640
16,20-bit,zoom	1600	625
16,20-bit	1500	585.9375
16,20-bit,zoom	1280	500
16,20-bit,zoom	1200	468.75
16,20-bit,zoom	1024	400
16,20-bit	1000	390.625
16,20-bit,zoom	819.2	320
16,20-bit,zoom	800	312.5
16,20-bit	750	292.9688
16,20-bit,zoom	640	250
16,20-bit,zoom	600	234.375
16,20-bit,zoom	512	200
16,20-bit	500	195.3125
16,20-bit,zoom	409.6	160
16,20-bit,zoom	400	156.25
16,20-bit	375	146.4844
16,20-bit,zoom	320	125
16,20-bit,zoom	300	117.1875
16,20-bit,zoom	256	100
16,20-bit	250	97.65625
16,20-bit,zoom	204.8	80
16,20-bit,zoom	200	78.125
16,20-bit	187.5	73.24219
16,20-bit,zoom	160	62.5
16,20-bit,zoom	150	58.59375
16,20-bit,zoom	128	50
16,20-bit	125	48.82813
16,20-bit,zoom	102.4	40
16,20-bit,zoom	100	39.0625
16,20-bit	93.75	36.62109
16,20-bit,zoom	80	31.25

Noise/Arb Frequency Spans

Mode	Sample Rate (Hz)	Bandwidth (Hz)
16,20-bit,zoom	75	29.29688
16,20-bit,zoom	64	25
16,20-bit	62.5	24.41406
16,20-bit,zoom	51.2	20
16,20-bit,zoom	50	19.53125
16,20-bit	46.875	18.31055
16,20-bit,zoom	40	15.625
16,20-bit,zoom	37.5	14.64844
16,20-bit	32	12.5
16,20-bit	31.25	12.20703
16,20-bit,zoom	25.6	10
16,20-bit,zoom	25	9.765625
16,20-bit	23.4375	9.155273
16,20-bit,zoom	20	7.8125
16,20-bit,zoom	18.75	7.324219
16,20-bit,zoom	16	6.25
16,20-bit	15.625	6.103516
16,20-bit,zoom	12.8	5
16,20-bit,zoom	12.5	4.882813
16,20-bit	11.71875	4.577637
16,20-bit,zoom	10	3.90625
16,20-bit,zoom	9.375	3.662109
16,20-bit,zoom	8	3.125
16,20-bit	7.8125	3.051758
16,20-bit,zoom	6.4	2.5
16,20-bit,zoom	6.25	2.441406
16,20-bit	5.859375	2.288818
16,20-bit,zoom	5	1.953125
16,20-bit,zoom	4.6875	1.831055
16,20-bit,zoom	4	1.5625
16,20-bit	3.90625	1.525879
16,20-bit,zoom	3.2	1.25
16,20-bit,zoom	3.125	1.220703
16,20-bit	2.929688	1.144409
16,20-bit,zoom	2.5	0.976563
16,20-bit,zoom	2.34375	0.915527
16,20-bit,zoom	2	0.78125
16,20-bit	1.953125	0.762939
16,20-bit,zoom	1.6	0.625
16,20-bit,zoom	1.5625	0.610352
16,20-bit	1.464844	0.572205
16,20-bit,zoom	1.25	0.488281
16,20-bit,zoom	1.171875	0.457764
16,20-bit,zoom	1	0.390625
16,20-bit	0.976563	0.38147
16,20-bit,zoom	0.8	0.3125
16,20-bit,zoom	0.78125	0.305176
16,20-bit	0.732422	0.286102
16,20-bit,zoom	0.625	0.244141
16,20-bit,zoom	0.585938	0.228882
16,20-bit,zoom	0.5	0.195313
16,20-bit	0.488281	0.190735
16,20-bit,zoom	0.4	0.15625
16,20-bit,zoom	0.390625	0.152588
16,20-bit	0.366211	0.143051
16,20-bit,zoom	0.3125	0.12207
16,20-bit,zoom	0.292969	0.114441
16,20-bit,zoom	0.25	0.097656
16,20-bit	0.244141	0.095367
16,20-bit,zoom	0.2	0.078125
16,20-bit,zoom	0.195313	0.076294
16,20-bit	0.183105	0.071526
16,20-bit,zoom	0.15625	0.061035
16,20-bit,zoom	0.146484	0.05722
16,20-bit,zoom	0.125	0.048828

VXI System Level Specifications

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 gives the continuous rate at which a user must supply data for a given span.

Constant Level Output

Output Level at 1 kHz (after 1 second settling, amplitude scale factor is > 0.001)	1 Vp (nominal)
Output Impedance	1.2 k Ω (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 (\pm 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 (optional 5th channel only)	
Maximum Input	Level 10 Vp
Gain, Summer Input to Signal Output	0 \pm 0.5 dB at 1 kHz
Input Impedance	> 10 k Ω (typical)
Flatness, dc to 25.6 kHz	\pm 0.5 dB (typical)
Sine Wave Distortion	-80 dBc (typical)
Residual dc Offset	1 mV (typical)

Features

VXI Standard Information	<p>Conforms to VXI revision 1.4</p> <p>C-size, single slot width</p> <p>Register-based programming</p> <p>"Slave" Data Transfer Bus functionality</p> <p>A24 address capability</p> <p>D32 data capability</p> <p>Optional Local Bus capability</p> <p>SUMBUS driver and receiver</p> <p>Requires 2 or 4 TTLTRG_ lines for multi-module synchronization</p>
Signal Processing	<p>33 MHz Motorola 96002 DSP</p> <p>Two banks of 128K word static RAM</p> <p>128 Kbytes Flash ROM</p> <p>Direct Memory Access (DMA) data transfer</p> <p>4 Mbytes dynamic RAM with option ANM</p> <p>32 Mbytes dynamic RAM with option ANC</p>

Software Drivers

Driver Type	C libraries with source code
Supported Operating Systems	Microsoft Windows [®] 95 and Windows NT [®] , and HP-UX 10.20
Supply Media	CD-ROM
VXI Plug & Play Compliance	C libraries support MS Windows 95 and Windows NT and HP-UX 10.20.

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

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

General Characteristics

VXI Power Requirements**dc Current**

No options installed

+5V	4.90A
+12V	0.60A
-12V	0.55A
+24V	0.20A
-24V	0.25A
-5.2V	0.60A
-2V	0.03A

Source option installed (1D4)

+5V	0.60A
+12V	0.19A
-12V	0.18A
+24V	0.03A
-24V	0.03A
-5.2V	0.00A
-2V	0.00A

Dynamic Current

+5V	0.03A
+12V	0.04A
-12V	0.05A
+24V	0.01A
-24V	0.01A
-5.2V	0.03A
-2V	0.01A

VXI Cooling Requirements4.39 liters/second
0.32 mm H₂O

Warm-up Time

15 minutes

Specification Note

Specifications describe warranted performance over the temperature range of 0° to 50 °C, after a 15-minute warm-up from ambient conditions. Supplemental characteristics identified as “typical” provide useful information by giving non-warranted performance parameters. Typical performance is applicable from 20° to 30 °C.

Abbreviations

F_s = sample rate of ADC.

F_c = cut off frequency of high pass or low pass filters.

dB_{fs} = dB relative to full scale amplitude range.

dB_c = dB relative to carrier amplitude.

Typical = typical, non-warranted, performance specification included to provide general product information.

Warranty Information

This product is distributed, warranted, and supported by Agilent Technologies. The E1434A comes with a three year warranty. During that period, the unit will either be replaced or repaired, at Agilent Technologies' option, and returned to the customer without charge.

Related Agilent Literature

Agilent E1432A/33B/34A
Product Overview
5965-9834E

http://www.tm.agilent.com/tmo/pia/data_acq/PIATop/English/index.html

Agilent Technologies' Test and Measurement Support, Services, and Assistance

Agilent Technologies aims to maximize the value you receive, while minimizing your risk and problems. We strive to ensure that you get the test and measurement capabilities you paid for and obtain the support you need. Our extensive support resources and services can help you choose the right Agilent products for your applications and apply them successfully. Every instrument and system we sell has a global warranty. Support is available for at least five years beyond the production life of the product. Two concepts underlie Agilent's overall support policy: "Our Promise" and "Your Advantage."

Our Promise

Our Promise means your Agilent test and measurement equipment will meet its advertised performance and functionality. When you are choosing new equipment, we will help you with product information, including realistic performance specifications and practical recommendations from experienced test engineers. When you use Agilent equipment, we can verify that it works properly, help with product operation, and provide basic measurement assistance for the use of specified capabilities, at no extra cost upon request. Many self-help tools are available.

Your Advantage

Your Advantage means that Agilent offers a wide range of additional expert test and measurement services, which you can purchase according to your unique technical and business needs. Solve problems efficiently and gain a competitive edge by contracting with us for calibration, extra-cost upgrades, out-of-warranty repairs, and on-site education and training, as well as design, system integration, project management, and other professional engineering services. Experienced Agilent engineers and technicians worldwide can help you maximize your productivity, optimize the return on investment of your Agilent instruments and systems, and obtain dependable measurement accuracy for the life of those products.

For More Assistance with Your Test & Measurement Needs go to

www.agilent.com/find/assist

Or contact the test and measurement experts at Agilent Technologies
(During normal business hours)

United States:
(tel) 1 800 452 4844

Latin America:
(tel) (305) 267 4245
(fax) (305) 267 4286

Canada:
(tel) 1 877 894 4414
(fax) (905) 206 4120

Australia:
(tel) 1 800 629 485
(fax) (61 3) 9272 0749

Europe:
(tel) (31 20) 547 2323
(fax) (31 20) 547 2390

New Zealand:
(tel) 0 800 738 378
(fax) 64 4 495 8950

Japan:
(tel) (81) 426 56 7832
(fax) (81) 426 56 7840

Asia Pacific:
(tel) (852) 3197 7777
(fax) (852) 2506 9284

Product specifications and descriptions in this document subject to change without notice.
Copyright © 1997, 1999, 2000 Agilent Technologies
Printed in U.S.A. 5/00
5963-9654E



Agilent Technologies

Innovating the HP Way