

ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

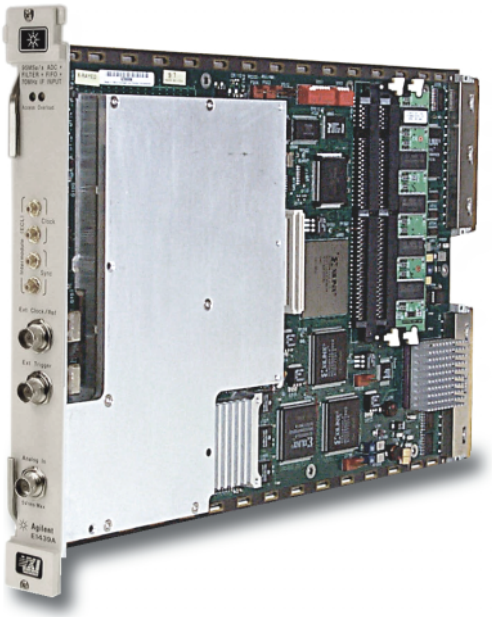
Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

Find the *Keysight / Agilent E1439A* at our website: ***Click HERE***

Agilent E1439A/B
95 MSa/s Digitizer with DSP and Memory

Product Overview



- 0—36 MHz baseband bandwidth
- 70 MHz IF input with 36 MHz bandwidth
- -90 dBfs residual spurious-free dynamic range
- Anti-alias filter and signal conditioning
- Digital decimation filters with tunable center frequency
- 18MB RAM FIFO memory (expandable to 1 GB)
- Local bus and VXIbus outputs
- Optical front panel data port (E1439B only)
- Multi-channel compatible
- VXI *plug&play* compatible
- Single-slot, C-size module

High resolution sampling with a 70 MHz IF input

The Agilent E1439A/B is ideal for RF communication applications. Its 70 MHz IF input connects to common VHF/UHF and µwave tuners. This single-channel 95 MSa/s digitizer combines exceptional spurious-free dynamic range with alias-protection, signal conditioning, center-frequency tunable digital filtering, and a large signal capture memory. The only difference between the A and B versions is the E1439B includes a 2.5 Gbit/sec optical front panel data port and TTL trigger input. The E1439A/B is a single slot C-size VXI module.

A new digitizer

The heart of the E1439A/B is a new, Agilent-designed, 95 MSa/s digitizer. This high performance monolithic component provides clean, low-distortion samples at a wider bandwidth than offered previously from Agilent.

The E1439A/B delivers high sample linearity. Residual spurious signal contamination is at least –90 dBfs. Distortion is less than –62 dBc for full scale inputs and –70 dBc at lower levels. Noise density is –132 dBfs/Hz.

Agilent Technologies

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

70 MHz IF input

The E1439A/B can be switched in software between ia 70 MHz IF input with 1 dB stepped attenuators and a baseband input with no attenuators.

The E1439A/B is a perfect match for VHF, UHF, and µwave tuners since 70 MHz is a common IF output for these devices. The IF input offers 36 MHz alias-protected bandwidth. When paired with a high quality tuner, the E1439A/B generates wide-band, sampled data with very high dynamic range. This is ideal for digital radios and spectrum analysis.

The baseband input has 36 MHz alias protection, but has no programmable gain. Users not requiring a 70 MHz IF input should consider the E1438A/B 100 MSa/sec ADC. The E1438A/B has stepped attenuators on its baseband-only input.

Built-in digital filtering and LO

The standard E1439A/B includes digital decimation filtering and a programmable LO.

Use the real-time filters to reduce noise and improve signal to noise ratio, or to filter out unwanted signals. The 17 filters provided reduce the analysis bandwidth of the E1439A/B from 280 Hz to full bandwidth in octave steps.

These filters also improve data efficiency. The data from each filter is decimated to reduce data rate and data quantity without losing any signal information.

The filter section also includes a digital LO. Use this complex frequency shifter to tune the center frequency of each digital filter anywhere in the 36 MHz input bandwidth of the E1439A/B.

The LO is helpful for processing digital modulation formats. The LO action is implemented using quadrature mixing, which produces the I/Q data needed for this task. These digital I and Q results are better matched and, at –90 dBfs, have lower spurious content than I/Q signals produced by analog means. The LO's 0.001 Hz resolution is vital for the precise tuning needed to stop a rotating constellation diagram.

Analog signal conditioning includes alias protection

The E1439A/B comes with analog signal conditioning, including a bypassable 36 MHz anti-alias filter. The anti-alias filter ensures the Nyquist-compatible sampling needed by most signal processing algorithms. The signal conditioning makes it easy to match the E1439A/B operating point to the signal amplitude. It can be extended for time domain applications by turning off alias protection.

Flexible triggering and synchronization

The E1439A/B can be triggered one of five ways. The *immediate trigger* begins sampling automatically. The *external trigger* mode is used when sampling must start coincident with an external event. The *level* mode triggers on the level of the input signal itself. A *software trigger* command is also provided.

Large pre- and post-trigger delays (>100 MSamples with the memory option) are standard. The external trigger modes support slope selection.

Use the external synchronization and external clock features of the E1439A/B when your application requires closely coordinated sampling with multiple E1439A/Bs. The user simply connects the ECL synchronization and clock ports between the modules and starts sampling. All sampling and digital filter timing will be coordinated between modules, providing less than 10 ns timing skew within a VXI mainframe. This skew is a constant and can be measured and compensated if more precise timing is required.

Large built-in memory

Many digital signal processing algorithms use blocks of data. The E1439A/B has an 18 MByte FIFO memory (144 MB, 288 MB, and 1.2 GB options available) to assemble data into blocks so the downstream DSP doesn't have to perform that task. The FIFO type design of the E1439A/B ensures that new data will not be lost while a data block is transferred out.

The FIFO also acts as signal capture memory. With the 1.2 GB FIFO option installed the E1439A has an eight-second time capture buffer (100 MSa/s, 12-bit real data format). With the lower data-rate 1 MHz decimating filter selected, the FIFO will store twelve minutes of data. Using the narrower filters will result in even longer signal capture times.

High-speed data transfer

The E1439A/B generates data at rates up to 190 MB/sec. There are three ways to transfer the data out of the module. The simplest way is to use the VXI-bus. It can transfer data at 2–4 MB/sec. This can be used for continuous sampling at 500 kHz or less, or for unloading full-bandwidth data saved in the RAM FIFO. The VXI local bus is faster, transferring data at up to 50 MB/sec, or 25 MSa/sec. For continuous sampling at the E1438A/B maximum sample rate of 95 MSa/sec, use the E1439B. Its optical front panel data port can transfer data continuously at 190 MB/sec.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

VXI*plug&play* programming

The E1439A/B is shipped with software and documentation to support a broad set of controllers, I/O interfaces, programming languages and operating systems.

Compiled C libraries (with source code), example programs, on-line help files, and an installation program are included as standard items with the E1439A/B. An executable front panel program allows the E1439A/B to be turned on, verified, and used for simple tasks without the requirement to write user programs.

The E1439A/B is fully VXI *plug&play* compliant and is easily controlled in 32-bit Windows® based VXI *plug&play* frameworks.

For those preferring the UNIX® operating system, a VXI *plug&play* C API function library is provided for HP-UX* running on HP Series 700 workstations.

If programming is done in C in a non-VXI *plug&play* environment, it is recommended to use the E1439A/B C libraries. The source code is shipped with these libraries and can be modified to work with a specific I/O and processor.

Other Agilent VXI ADCs

E1430A
E1437A
E1438A/B

Technical Specification Summary

(refer to Agilent E1439A/B Technical Specifications for more data)

Standard Input	
Ranges	
IF input	+12 dBm to –36 dBm, 1 dB steps
Baseband input	–21 dBm
Impedance	50W
Bandwidth	36 MHz (alias filter in), 95 MHz (alias filter out)
Distortion products	<–62 dBc or –90 dBfs, whichever is greater
Residual spurious	–90 dBfs
Noise density	–132 dBfs/Hz

Accuracy	
Raw resolution	12 bits
Absolute accuracy	
IF input	±1.5 dB
Baseband input	±0.7 dB

Clock	
Internal	95 MHz
External	10 MHz

Trigger	
Sources	Immediate, level, external, software

Filter	One analog anti-alias filter (36 MHz), 17 digital decimation filters (36 MHz to 275 Hz, octave steps) with digital LO (0.023 mHz tuning resolution)

Memory	
Type	FIFO
Capacity	18 MB, 144 MB, 288 MB or 1.2 GB

Optical serial front panel data port (E1439B only)	
Standard support	Proposed VITA 17.1, 1 Gbit/sec and 2.5 Gbit/sec
Connector	**Dual LC receptacle**
Optical type	Multi-mode fiber, 850 mm wavelength
Maximum length	100 meters

* HP-UX Release 10.20 and later and HP-UX Release 11.00 and later (in both 32- and 64-bitconfigurations) on all HP 9000 computers are Open Group UNIX 95 branded products.

UNIX is a registered trademark of the Open Group

Windows is a U.S. registered trademark of Microsoft Corporation.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Agilent accessories available

The E1439A/B "sync" and "clk" connectors may be connected to other E1439A/B modules in synchronized multi-channel applications. The following cable and terminator to connect the modules are available from Agilent. (See the Agilent VXI Source Book for additional cables.)

1250-0676	SMB 50W load
8120-5623	175 mm cable with SMB connectors

Backplane connector shields

The backplane connector shields are required for RFI compliance with the EN55011 and CISPR11 standards. Specify one Option 918 with the purchase of an Agilent VXI mainframe. Specify this kit for retrofitting an existing mainframe (E1400-80920 or E1421-80920).

Warranty

This product is distributed, warranted, and supported by Agilent Technologies.

The E1439A/B comes with a 3-year warranty. During that period, the unit will either be replaced or repaired, at Agilent Technologies' option, and returned to the customer without charge.

Ordering Information

Agilent E1439A/B	95 MSa/s AD with filter and memory
Option 144	144 MB FIFO memory
Option 288	288 MB FIFO memory

Related Agilent Literature

E1437A 20 MSample/Second ADC with Filter and FIFO Product Overview
literature number 5965-6893E

E1437A 20 MSample/Second ADC with Filter and FIFO Technical Specifications
literature number 5965-9774E

E1438A/B 100 MSample/Second Digitizer with DSP and Memory Product Overview
literature number 5968-7348E

E1438A/B 100 MSample/Second Digitizer with DSP and Memory Data Sheet
literature number 5968-8233E

E1439A/B VXI 70MHz IF ADC with Filters and Memory Data Sheet
literature number 5980-1260E

E9830A Delay Memory Module Product Overview
literature number 5968-7349E

Agilent Test System and VXI Products Catalog
literature number 5980-0307E

Visit our Websites

Agilent Communications Intelligence Information — www.agilent.com/find/COMINT

Agilent VXI Product Information — www.agilent.com/find/vxi

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.

By internet, phone, or fax, get assistance with all your test & measurement needs

Online assistance:
www.agilent.com/find/assist

Phone or Fax

United States:
(tel) 1 800 452 4844

Latin America:
(tel) (305) 269 7500
(fax) (305) 269 7599

Canada:
(tel) 1 877 894 4414
(fax) (905) 282 6495

Australia:
(tel) 1 800 629 485
(fax) (61 3) 9210 5947

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 © 2001 Agilent Technologies
Printed in USA April 3, 2001
5980-1261

Agilent Technologies

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP