Keysight Technologies
M9703A High-Speed AXIe Digitizer
8 Channels, 12-bit, Up to 3.2 GS/s

Industries and Applications

- Large scale applied physics experiments such as hydrodynamics or plasma fusion
- Radar and satellite communication applications such as multi-antenna calibration/test or beam-forming

Product Description

The M9703A is a revolutionary 8-channel digitizer, able to capture signals from DC to 2 GHz at 1.6 GS/s with 12-bit resolution. An interleaving capability allows signal acquisition at 3.2 GS/s on four channels with the best measurement accuracy. The Keysight Technologies, Inc. M9703A internal FPGAs can feature an optional real-time digital downconverter (DDC) allowing tuning and zooming on the analyzed signal. This allows improving the dynamic range, extending the capture time, and accelerating measurement speed for your application. Combine with the Keysight 89600 VSA software for advanced measurement analysis.

Main Features and Benefits

Product features	Your benefit
8 channels (4 if interleaving is enabled)	Easily build large scale acquisition systems
12-bit resolution	Highest dynamic range at GHz speed
Up to 3.2 GS/s sampling rate	Digitize wideband and very fast signals
DC to 2 GHz input frequency range	Fast and wide signals capture
Real-time digital downconverter	Tune and zoom on signals for reduced test time
Up to 4 GB (256 MSamples/ch) on-board memory	Long data acquisition time
PCIe backplane link for >650 MB/s data transfer	High digitized data throughput accelerating the measurements

Specifications and Characteristics

Hardware		
Size		1 slot
Resolution		12 bits
Channels		8
Sample rate	-SR1	1 GS/s (2 GS/s when interleaved)
	-SR2	1.6 GS/s (3.2 GS/s when interleaved)
Input frequency range (−3 dB bandwidth)		DC to 2 GHz (non-interleaved mode)
Full scale (FS) range		1 V / 2 V
Spurious-free dynamic range (SFDR)		60 dBc *(typical)*
Effective number of bits (ENOB)		8.8 bits *(typical)*
Signal-to-noise ratio (SNR)		57 dB *(typical)*
DDC analysis bandwidth		300 MHz, then $160\ MHz/2^N$, N = 0, 1, 2, … 18

Connector compatibility: AXIe, ATCA

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Software Information

The M9703A includes the Keysight MD1 soft front panel (SFP) graphical interface. This simple software application can be used to control, verify the functionality and explore the capabilities of the Keysight modular high-speed digitizers. The MD1 SFP provides several different measurement and display capabilities, one being a real-time FFT plot of the acquired signal.

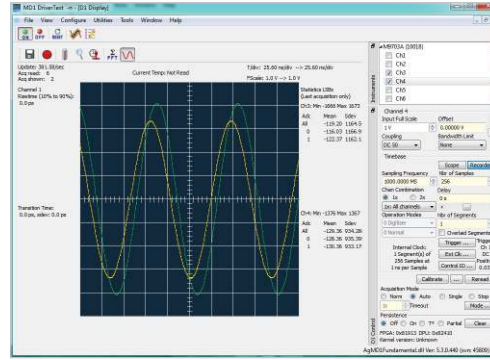|	
Supported operating systems	Microsoft Windows XP (32-bit)
	Microsoft Windows Vista (32/64-bit)
	Microsoft Windows 7 (32/64-bit)
	Linux
Standard compliant drivers	IVI-COM, IVI-C, LabVIEW, MATLAB
Supported application development environments (ADE)	VisualStudio (VB.NET, C#, C/C++), VEE, LabVIEW, LabWindows/CVI, MATLAB
Keysight IO libraries	Includes: VISA Libraries, Keysight Connection Expert, IO Monitor

Ordering Information

Model	Description
M9703A	AXIe 12-bit Digitizer
M9703A-SR1[1]	1 GS/s sampling rate
M9703A-SR2	1.6 GS/s sampling rate
M9703A-INT	Interleaved channel sampling functionality
M9703A-F05[1]	Input frequency: DC to 650 MHz
M9703A-F10	Input frequency: DC to 2 GHz (not interleaved) DC to 1 GHz (interleaved)
M9703A-M10[1]	1 GB (64 MS/ch) acquisition memory
M9703A-M20	2 GB (128 MS/ch) acquisition memory
M9703A-M40	4 GB (256 MS/ch) acquisition memory
M9703A-DDC	Digital down-converter firmware

1. These options are included in the default configuration of the M9703A

Related products	
M9502A	2-slot AXIe chassis
M9505A	5-slot AXIe chassis
M9536A	Embedded AXIe controller
U1092A	AcqirisMAQS Multichannel Acquisition Software
89601B	89600 VSA software, transportable license

Accessories
Software and product information on CD (included)

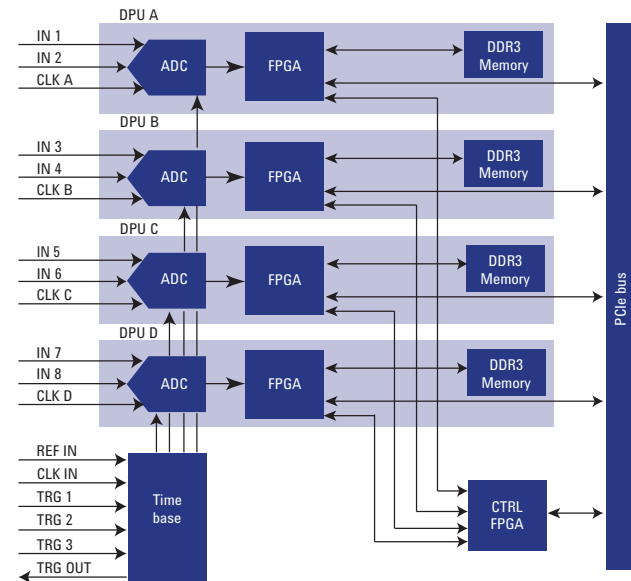Figure 1. Keysight M9703A MD1 software front panel (SFP) interface.

Figure 2. Simplified block diagram of the M9703A AXIe Digitizer.

Figure 3. Five Keysight M9703A AXIe 12-bit digitizers installed in the Keysight M9505A 5-slot AXIe chassis to form a 40-channel 12-bit acquisition system.

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