DATA SHEET

M9536A AXIe Embedded Controller

2.13 GHz Quad-Core, 8 GB

Overview

Introduction

The Keysight Technologies, Inc. M9536A is the world's first AXIe embedded controller which enables new capabilities not previously available and provides a high-performance, compact platform solution.

Product description

The Keysight M9536A is a powerful, one-slot module that can be used to build compact AXIe systems. It easily integrates into hybrid test systems using GP-IB, USB, and LAN with the built-in front panel interfaces and an optional USB/GP-IB converter such as the Keysight 82357B.

The embedded controller is built upon a high-performance Intel Xeon quad-core processor with Hyper-Threading Technology. This makes the embedded controller perfect for high-performance applications and multi-tasking environments.

Applications

- Aerospace and defense
- Communications
- Computation
- Electronic test
- High-energy physics

Highlights

- Powerful, one-slot module for transportable applications
- Fast data transfer rates across the backplane
- Intel Hyper-Threading Technology provides performance required for multi-threaded applications
- Preloaded with M9502A/M9505A drivers, operating system and Keysight I/O libraries for reduced test system development time
- Solid-state drive for improved reliability
- Specifically designed for AXIe systems providing choice between embedded and external controllers

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Features

- Intel Xeon EP Quad Core L5518 processor at 2.13 GHz
- 1-slot AXIe module
- 160 GB solid-state drive
- 8 GB RAM memory with a 16 GB option
- Gen 2 x4 PCIe link to AXIe backplane providing 2 GB/s max data bandwidth
- Front panel connections with USB (3), 10/100/1000 LAN (2), VGA (up to 1600x1200), and serial port
- One AXIe LAN channel
- Support for Windows 7 (32 and 64 bit)

Easy Setup … Test … and Maintenance

Hardware platform

Hardware overview

Based on the Intel Xeon processor with Hyper-Threading Technology, the M9536A is ideal for modular applications requiring high performance and the compact size of an embedded computer.

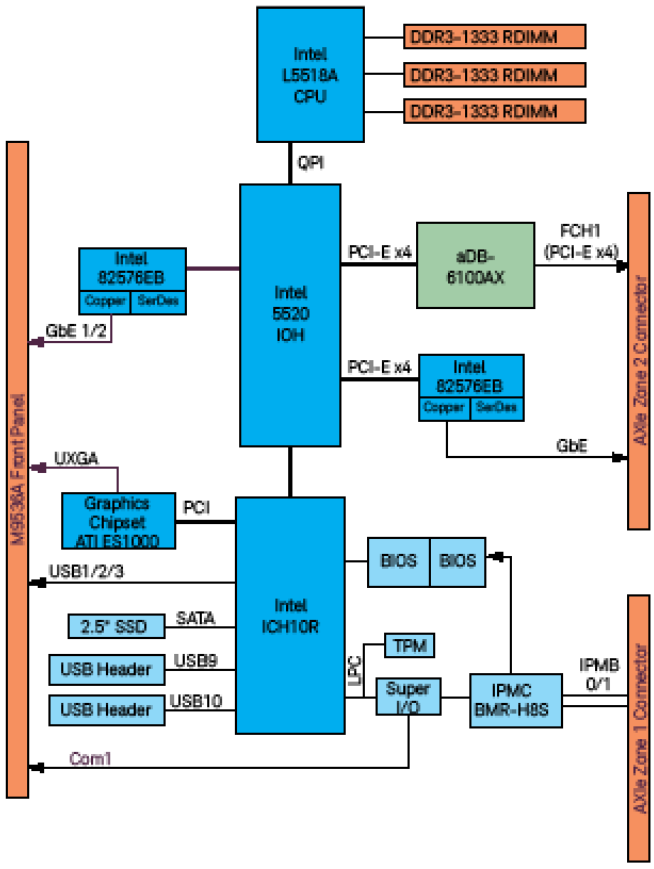

Figure 1. Keysight M9536A block diagram

Quad-core processor

The M9536A architecture is built using the Intel Xeon L5518 quad-core processor as its basis. This processor utilizes the Intel Hyper-Threading Technology with a total of 8 simultaneous threads. Use a multi-tasking operating system, such as Microsoft Windows 7, to take full advantage of capabilities of this processor.

Memory

The M9536A has three 240-pin RDIMM memory sockets which support DDR3-1333 REG/ECC RAM. Each socket can support memory modules up to 8 GB for a total memory capacity of 24 GB. The standard configuration utilizes a single 8 GB memory module with an option to add a second 8 GB module. This leaves an empty socket for future upgradeability.

Solid-state drive

A 160 GB solid-state drive is included standard with the M9536A. This drive provides superior reliability compared to a conventional rotating hard drive.

Video

The Keysight M9536A has an integrated ATI ES1000 2D graphics controller to provide an analog VGA port on the front panel. This graphics controller is capable of UXGA resolution up to 1600 x 1200.

Peripheral I/O

The embedded controller provides I/O connections to both the front panel and the AXIe backplane. The front panel contains connectors for USB 2.0, UXGA graphics, Gigabit Ethernet, and RS-232. Connections to the AXIe backplane include both Gigabit Ethernet and Gen2 x4 PCIe. The controller can be connected to GP-IB instruments using an external USB/GP-IB converter such as the Keysight 82357B.

Compliance

The M9536A embedded controller is AXIe 1.0 compliant. It does not provide the chassis management functions of the AXIe system module but does provide additional processing power for the chassis. Hence, it should be installed in a secondary hub-slot in an AXIe chassis such as slot #1 in the Keysight M9502A or M9505A.

Easy maintenance and support

The M9536A is easy to maintain or upgrade. Simply detach a panel to remove and install memory or replace the solid-state drive. The SSD contains a recovery partition that can be used to restore the drive to the factory default conditions.

Software platform

The embedded controller supports Microsoft Windows operating systems and comes with the selected operating system and M9502A/M9505A drivers installed. Keysight I/O libraries, including VISA, Keysight Connection Expert, and I/O monitor, are also pre-installed.

Technical Specifications and Characteristics

General characteristics	
Standards compliance	
AXIe 1.0 Base Architecture Specification	
AdvancedTCA PICMG 3.0 R2.0 Specification	
Chassis slot compatibility	AXIe 1.0 secondary hub slot (slot #1 in the M9502A and M9505A)
Controller characteristics	
CPU	Intel Xeon L5518 Quad-core
CPU threads	8
CPU clock frequency	2.13 GHz
Chipset	Intel 5520/ICH10R
Video	ATI ES1000 with 64 MB VRAM
Memory	
L2 cache	8 MB
RAM type	Three DDR3-1333 240-pin RDIMM Sockets
RAM capacity	8 GB standard, 16 GB optional, 24 GB maximum
BIOS	AMIBIOS8
Storage	
Type	2.5” SATA II SSD
Size	160 GB
Operating system support	Windows 7 (32- and 64-bit)
Pre-loaded software	M9502A/M9505A drivers, operating system and Keysight I/O libraries
Mechanical characteristics	
Form factor	1 slot AXIe
Size	30 mm W x 322.25 mm H x 280 mm D
Weight	4.1 kg (9 lbs)
Electrical characteristics	
Current input	2.5 A @48 V (nominal)
Power dissipation	120 W
I/O characteristics	
Front panel connections	
USB	Three USB 2.0 (type A)

Ethernet	Two 10/100/1000BASE-T (RJ45 connector)	
Video	UXGA up to 1600 x 1200 resolution (DB-15 connector)	
Serial	RS-232 (RJ45 connector)	
AXIe backplane I/O		
PCIe link Configuration Data bandwidth	 x4 2 GB/s max (Gen 2)	
Ethernet	10/100/1000BASE-T	
Environmental characteristics [1] [2]		
	Operating	**Storage**
Temperature	0 to 50 ˚C	–40 to 70 ˚C
Altitude	Up to 3000 m (9800 ft)	Up to 4600 m (15000 ft)
Humidity	Type-tested at 95%, +40 ˚C (non-condensing)	Type-tested at 95%, +40 ˚C (non-condensing)
Vibration		
Operating random vibration: type-tested at 5 to 500 Hz, 0.21 g rms		
Survival random vibration: type-tested at 5 to 500 Hz, 2.09 g rms		

Safety

Complies with European Low Voltage Directive 2006/95/EC

- IEC/EN 61010-1, 2nd Edition
- Canada: CSA C22.2 No. 61010-1-04
- USA: UL Std No. 61010-1, 2nd Edition

EMC

Complies with European EMC Directive 2004/108/EC

- IEC/EN 61326-1
- CISPR Pub 11 Group 1, Class A
- AS/NZS CISPR 11
- ICES/NMB-001

This ISM device complies with Canadian ICES-001. Cet appareil ISM est conforme a la norme NMB-001 du Canada

[1] Samples of this product have been type tested in accordance with the Keysight Environmental Test Manual and verified to be robust against the environmental stresses of storage, transportation and end-use; those stresses include but are not limited to temperature, humidity, shock, vibration, altitude and power line conditions.
[2] Test Methods are aligned with IEC 60068-2 and levels are similar to MIL-PRF-28800F Class 3.

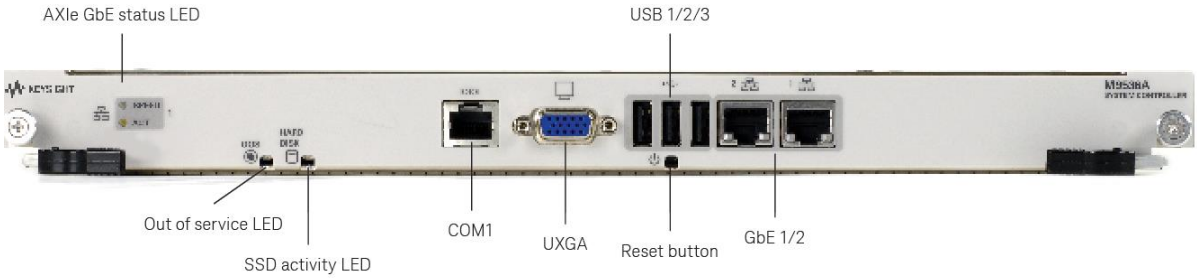

Figure 2. Front panel connections

Configuration and Ordering Information

Software

Model	Description
Supported operating systems	Microsoft Windows 7 (32/64-bit)
Keysight IO Libraries	Includes: VISA Libraries, Keysight Connection Expert, IO Monitor
Chassis slot compatibility: AXIe 1.0 secondary hub-slot (slot number 1 in the M9502A and M9505A)	

Definitions for specifications

Specifications describe the warranted performance of calibrated instruments that have been stored for a minimum of 2 hours within the operating temperature range of 0 to 55 °C, unless otherwise stated, and after a 45 minute warm-up period. Data represented in this document are specifications unless otherwise noted.

Characteristics describe product performance that is useful in the application of the product, but that is not covered by the product warranty. Characteristics are often referred to as Typical or Nominal values.

- Typical describes characteristic performance, which 80% of the instruments will meet when operated over a 20 to 30 °C temperature range. Typical performance is not warranted.
- Nominal describes representative performance that is useful in the application of the product when operated over a 20 to 30 °C temperature range. Nominal performance is not warranted.

Note: All graphs contain measured data from several units at room temperature unless otherwise noted.

Ordering Information

Model	Description
Typical product configuration	
M9536A	AXIe Embedded PC Controller
M9536A-M16	Memory upgrade from 8 GB RAM to 16 GB RAM
M9536A-WE6	Microsoft Windows Embedded Standard 7 Operating System (64-bit)
M9536A-WE3	Microsoft Windows Embedded Standard 7 Operating System (32-bit)
M9536-55501	8GB RAM module for M9536A Embedded Controller

Related products

Model	Description
M9502A	2-slot AXIe chassis
M9505A	5-slot AXIe chassis

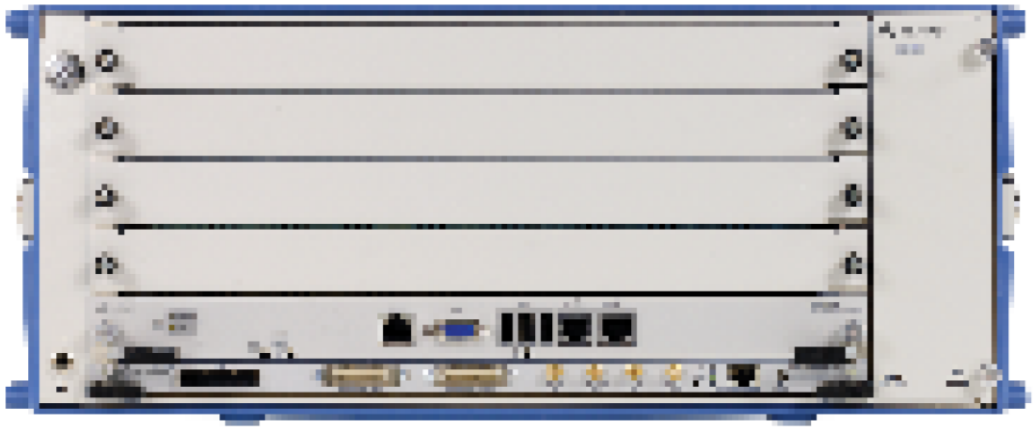

Figure 3. M9536A AXIe embedded controller installed in the M9505A 5 slot AXIe chassis

Learn more at: www.keysight.com

For more information on Keysight Technologies' products, applications or services, please contact your local Keysight office. The complete list is available at: www.keysight.com/find/contactus

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