

Avago® SAS 9311 12Gb/s SAS Host Bus Adapter Family



Key Features

- Eight/four ports of 12Gb/s SAS + SATA ports
- Eight lanes of PCI Express 3.0
- Low-profile form factor
- Mini-SAS HD connectors
- SAS 3008 12Gb/s SAS+SATA controller
- Supports SSDs, HDDs, and tape drives
- Offers Integrated RAID (0, 1, 1E and 10)

Key Advantages

- Provides connectivity in a low-profile form factor
- 8 lanes of PCI Express 3.0 provides fast signaling for high bandwidth applications
- High performance with 12Gb/s SAS data transfer rates

For applications demanding high levels of storage connectivity, performance, and Integrated RAID support. SAS 9311 HBAs connect servers and appliances to internal and external storage, achieving over 1 million IOPS.

Overview

The SAS 9311 8 and 4-port, 12Gb/s SAS host bus adapter family provide increased connectivity and maximum performance for high-end servers and appliances within internal storage, or connecting to large scale storage enclosures.

The SAS 9311 HBA family is based on the SAS 3008 IO controller, integrating the latest enhancements in SAS and PCI Express® technology. Each host bus adapter also supports 8 or 4 SAS ports operating at 12Gb/s data transfer rates, and can reach over 1 million IOPs. The 9311 adapter family supports 8 PCI Express lanes that comply with the latest PCI Express 3.0 specifications. In addition, these adapters are backwards compatible with previous SAS and PCIe generations through automatic negotiation, and provide SAS data transfer rates of 12, 6, and 3 Gb/s per lane, and SATA data transfer rates of 6 and 3Gb/s per lane.

The SAS 9311 adapter family offers Integrated RAID (0, 1, 1E, and 10) support. Due to simplifying the configuration options and offering a IR firmware support for its 6Gb/s SAS host adapters, these integrated RAID solutions provide a low cost option for the server or workstation market which requires the extra performance, storage capacity, and/or redundancy of a RAID configuration.

Integrated RAID offers distinct performance and reliability advantages, including reduced CPU levels on your host computer, and also volumes that are OS agnostic.

The Integrated RAID solution includes the following RAID features:

- The Integrated Mirroring solution, which provides features of RAID 1
- The Integrated Mirroring + Striping solution, which provides features of RAID 10
- The Integrated Mirroring Enhanced solution, which provides features of RAID 1
- The Integrated Striping solution, which provides features of RAID 0

Avago Storage by LSI™

Avago Technologies products serve four primary target markets: wireless communications, wired infrastructure, enterprise storage, and industrial. Avago Storage by LSI™ offers the industry's broadest portfolio of storage solutions, backed by decades of experience and trusted by the world's leading server and storage suppliers. Avago provides the building blocks for storage solutions that help customers understand, prioritize, store and protect critical data.

The Avago 12Gb/s SAS portfolio includes MegaRAID® controller cards, host bus adapters (HBAs), advanced software options, Syncro® shared DAS solutions and SAS storage ICs, including RAID-on-Chip (ROCs), I/O controllers and expanders.

Fusion-MPT™ Architecture

Fusion-MPT architecture marks the next generation of I/O architecture designed to deliver the highest performance available today while reducing time to market, integration, and certification time. Fusion-MPT

devices are high performance, cost-effective protocol controllers that represent the newest system-level integration technology in intelligent I/O processors from Avago.

	SAS 9311-8i	SAS 9311-4i4e
IO Controller	SAS 3008 Fusion MPT 2.5	SAS 3008 Fusion MPT 2.5
Port Count	8 port, internal	4 port ext/4 port int
Connectors	Mini SAS HD SFF8643 Two (x4)	Mini SAS HD SFF8644 One (x4), SFF8643 One (x4)
Storage Connectivity Data Transfer Rates	12Gb/s SAS 3.0 Compliant	12Gb/s SAS 3.0 Compliant
SAS Bandwidth	Half Duplex (x8 wide bus) 9600 MB/s	Half Duplex (x8 wide bus) 9600 MB/s
Port Configurations	8 ea, x1 ports (individual drives) 2 ea, x4 wide port	8 ea, x1 ports (individual drives) 2 ea, x4 wide port
Host Bus	x8 lane, PCIe 3.0	x8 lane, PCIe 3.0
PCI Data Burst Transfer Rates	Half Duplex x8, PCIe 3.0, 8000 MB/s	Half Duplex x8, PCIe 3.0, 8000 MB/s
Form Factor	Low Profile	Low Profile
Physical Dimensions	2.6" x 6.0"	2.6" x 6.0"
Brackets	Full Height and low profile vented	Full Height and low profile vented
Cable Support	Passive Copper	Passive Copper Active Optical (Ext only)
Operating Voltage	+12V +/-8%; 3.3V +/-9%	+12V +/-8%; 3.3V +/-9%
LED Management	Reference SFF-8485 (SGPIO) compliant	Reference SFF-8485 (SGPIO) compliant
PCI Power (Nominal)	13W	14.25W
Integrated RAID (IR)	14 spread across 2 volumes RAID 0 10 per volume RAID 1 2 per volume plus hot spare RAID 1E 10 per volume RAID 10 10 per volume	14 spread across 2 volumes RAID 0 10 per volume RAID 1 2 per volume plus hot spare RAID 1E 10 per volume RAID 10 10 per volume
Environmental	Operating: 0°C to 55°C Storage: -45°C to 105°C 5 to 90% non-condensing Airflow: 200 LFM	Operating: 0°C to 55°C Storage: -45°C to 105°C 5 to 90% non-condensing Airflow: 200 LFM
MTBF	>2,800,000 hours	>2,800,000 hours
Regulatory Certifications	EMC: Class B-US (CFR 47, P15B); Canada (ICES-003); Japan (V-3/02.04); Europe (EN55022/EN55024); Australia/New Zealand (AS/NZS 3548); Korea (N-B 2-0001-404); Safety: EN60950; RoHS; WEEE	
OS Support	Microsoft Windows, Linux (SuSE, Red Hat), Solaris, VMware, FreeBSD; See www.lsi.com/support for details on versions * The HBA supports Solaris 10 and Oracle® provides a built in driver; installation of an Avago driver is not required. For more information on the Oracle Solaris 10 driver and installation, sign in at the following Oracle link: https://support.oracle.com/ . Contact Oracle support for Oracle driver or software support.	
Warranty	3 years, free advanced technical support, advanced replacement option	



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