



APPLICATIONS

- External and internal storage connections
- Mid to high-end servers
- High-performance workstations

TYPICAL USES

- Tiered SATA and SAS RAID systems
- External JBOD enclosures
- Direct-attach internal SAS or SATA drives

KEY FEATURES

- 6Gb/s per port data transfer rate
- Four internal ports, four external ports
- Four x1 SATA internal connectors
- One x4 Mini-SAS external connector (SFF8088)
- x8 PCI Express 2.0 host interface
- Allows up to 256 SAS or SATA endpoint devices
- High performance IOP
- PowerPC 440 @ 533MHz
- Power management support
- Supports SSP, SMP, STP and SATA protocols
- Consistency Check
- Hot Spare Support
- S.M.A.R.T. error detection
- Supports SSDs, HDDs and tape drives
- Environmentally-friendly due to low power consumption

LSI SAS 9212-4i4e

Eight-Port 6Gb/s PCI Express SATA+SAS Host Bus Adapter

KEY ADVANTAGES

- High performance with 6Gb/s data transfer rates
- Connect to both internal and external storage arrays with one adapter
- PCI Express 2.0 host interface drives superior system performance
- Flexible SATA+SAS array support optimizes costs
- Fusion-MPT™ Architecture delivers more than 290,000 I/Os per second

6Gb/s SATA+SAS Advantage

The LSI SAS 9212-4i4e host bus adapter (HBA) provides the greatest available throughput to internal server and external storage arrays through high-speed 6Gb/s ports, supporting up to 256 SATA and SAS physical devices. It bolsters server storage RAID and non-RAID enclosures by pairing a x8 PCI Express 2.0 host interface with one external x4 SFF8088 Mini-SAS connector and four internal x1 SATA connectors.

6Gb/s SAS technology enhancements, such as End-to-End CRC, power management, and hot plug support, combine to produce an extremely powerful yet dependable solution. Additionally, the T-10 Protection Model delivers early detection of and recovery from data corruption and Spread Spectrum Clocking reduces EMI reductions. Other new features include greater signal integrity and longer cables using Decision Feedback Equalization and support for more sophisticated SAS topologies using Expander Self-discovery/Self-configuration.

Flexible to Fit Your Needs

LSI SATA+SAS HBAs build upon previous generations of industry-leading LSI SAS technology, delivering performance and power saving advantages along with the added assurance gained from robust interoperability testing. Built to handle the constantly changing and complex requirements of enterprise storage,

LSI HBAs effortlessly manage the need for larger capacity, greater density and scalability.

The LSI SAS 9212-4i4e works easily with SATA and SAS, hard disk drives, solid state drives, and tape drives. It also doubles the performance of previous generation SATA+SAS HBAs and is optimal for driving cost-effective and reliable scalability in today's data centers.

Low Overhead Integrated RAID Architecture

LSI Integrated RAID (IR) is a low-cost, hardware RAID solution made possible by Fusion-MPT™ architecture, which can achieve over 290,000 I/Os per second. IR is a processor-based RAID solution designed for systems requiring redundancy and high-availability where a feature-rich RAID implementation is not desired or may be cost-prohibitive. The LSI SAS 9212-4i4e employs the LSI SAS2008 controller to perform these RAID functions. By providing RAID at the hardware level, the host CPU does not perform RAID calculations allowing for more efficient system operation.

LSI advanced Integrated RAID options include Integrated Striping (RAID 0), Integrated



LSI SAS 9212-4i4e

Mirroring (RAID 1), Integrated Mirroring Enhanced (RAID 1E), and Integrated Mirroring and Striping (RAID 10). By limiting the RAID configurations possible, Integrated RAID is one of the most affordable hardware RAID options available.

Leading the Way

Since the inception of SAS, LSI has delivered innovative products across its extensive portfolio

of controller ICs, expanders, HBAs, motherboard solutions and storage systems. By offering best-in-class SAS technologies, broad interoperability and single one-stop vendor support, the LSI SATA+SAS portfolio uniquely addresses the full spectrum of server, workstation and enterprise storage architecture requirements for implementing complete SAS solutions. Integrators can be assured that their LSI adapter is providing the most advanced and robust serial technology available.

Operating System Support

The LSI SAS 9212-4i4e host bus adapter supports Microsoft® Windows®, Linux® (SuSE®, Red Hat®), Solaris®, and VMware operating systems. All OS drivers are backed by extensive testing and validation to ensure optimum system performance.

For a list of the most current supported drivers, visit lsichannelgateway.com/support.

LSI SAS 9212-4i4e HOST BUS ADAPTER		
PCI Bus	8-lane, 5 GT/s PCI Express 2.0	
PCI Modes	Bus Master DMA	
PCI Data Burst Transfer Rates	Half Duplex X8 PCIe 4000 MB/s	Full Duplex X8 PCIe 8000 MB/s
SAS Bandwidth	Half Duplex Single Lane- 600MB/s Wide port (2 lanes) – 1200MB/s Wide port (3 lanes) – 1800MB/s Wide port (4 lanes) – 2400MB/s Wide port (2x4)-4800MB/s	Full Duplex Single lane- 1200MB/s Wide port (2 lanes)- 2400MB/s Wide port (4 lanes)- 4800MB/s
PCI Card Type	3.3V Add-in Card	
PCI Voltage	+12V ±10%	
PCI Form Factor	6.6" x 2.536" (Low-Profile)	
PCI Power	13.5W	
Brackets	Full Height and Low-Profile	
Certification Level	PCI Express 2.0	
I/O Bus	2 x4 6Gb/s SAS/SATA ports	
SAS Controller	LSISAS2008	
Connectors	Internal Four x1 SATA	External One x4 Mini-SAS SFF8088
LED Indicators	Internal Activity/Fault per x4 port – Heartbeat	External Activity/Fault per x4 port – Heartbeat
Integrated RAID	Integrated RAID 0, 1, 1E and 10	
Max Number of Physical Devices	Non-RAID Integrated RAID (IR) RAID 0 RAID 1 RAID 1E RAID 10	256 14 spread across 2 volumes 10 per volume 2 per volume plus hotspare 10 per volume 10 per volume
Environments	Operating 0°C to 70°C 5 to 90% Non-condensing	Storage -45°C to 105°C 5 to 90% Non-condensing
MTFB	>2,000,000 Hours	
Compliances	EMC: Class B-US (CFR 47, P15B); Canada (ICES-003); Japan (V-3/02.04); Europe (EN55022/EN55024); Australia/New Zealand (AS/NZS 3548); Safety: EN60950	
OS Support	Microsoft® Windows®, Linux® (SuSE®, Red Hat®), Solaris®, VMware®. See www.lsi.com/support for details on versions.	
Ordering Information	LSI SAS 9212-4i4e Single Pack P/N: LSI00194	
Warranty	3 years, advanced replacement option, free technical support at lsi.com/support	

For more information and sales office locations, please visit the LSI web sites at:

lsi.com lsi.com/channel

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