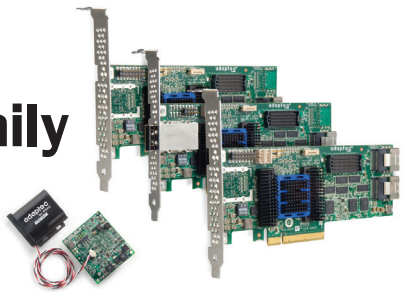
adaptec by PMC

SERIES 6 DATA SHEET

Adaptec 6Gb/s SATA & SAS RAID Family

with Intelligent Power Management & Zero-Maintenance Cache Protection (6405, 6445, 6805)



Unified Serial® (SATA/SAS) 6Gb/s RAID Controllers Deliver Superior Bandwidth and Reliability, Energy Efficiency and Operating Costs Savings

Adaptec Series 6 RAID controllers feature PMC-Sierra's market-leading, multi-core SRC 8x6G RAID-on-Chip (ROC), 512MB DDR2 667MHz cache, and an x8 PCI Express Gen2 host bus connection. They support up to 256 SATA/SAS devices and feature Adaptec Intelligent Power Management for improved energy-efficiency, plus Zero-Maintenance Cache Protection (ZMCP — pronounced "zemcap") to help data centers save thousands of dollars in operating costs.

Highest Performance

Series 6 controllers deliver up to 60% higher sustained sequential throughput than previous generation Adaptec controllers and up to 2GB/s sustained data transfer rate to the host. At peak performance, Series 6 offers 4.8GB/s through the SAS 2.0 interface and 4.0GB/s through the PCI Gen 2 host interface.

Advanced Data Protection

Adaptec RAID Code (ARC) delivers maximum reliability with RAID levels 0, 1, 1E, 5, 5EE, 6, 10, 50, 60 and JBOD. ARC also offers RAID Level Migration (the ability to easily migrate RAID levels), Online Capacity Expansion (expand capacity without powering down the server), and Copyback Hot Spare (when a failed drive has been replaced, data is automatically copied from the hot spare back to the restored drive).

Hybrid RAID

With Hybrid RAID 1 & 10 the Series 6 controllers offer maximum performance and reliability by combining Solid State Drives (SSDs) and Hard Disk Drives (HDDs) in a single array. By performing read operations from the faster SSD and write operations on both the SSDs and HDDs the result is tremendous performance gains over standard HDD RAID arrays. Hybrid RAID offers the benefits of both technologies and allows a better cost per GB ratio than comparable SSD-only RAID arrays.

The Case for Cache

The fastest way for a RAID controller to fulfill a read or write request is to serve data out of its cache. Savvy network administrators know that enabling the RAID controller cache offers significant performance benefits, such as reduced latency in I/O requests, bandwidth and queue depths that surpass software application limits, and on-the-fly parity calculations on sequential writes.

Zero-Maintenance Cache Protection

RAID controllers typically employ battery backup units (BBUs) to protect cached data during power loss, but BBUs require constant monitoring and preserve data for a maximum of 72 hours during power loss. Series 6 controllers introduce Zero-Maintenance Cache Protection, a revolutionary advancement that solves BBU deficiencies by providing full protection to cached data with no installation, monitoring, maintenance, disposal, or replacement costs.

Featuring 4GB of SLC based NAND flash memory with super capacitor technology (available as a separate Kit), Series 6 controllers instantly save cache contents in the event of system power loss. On a power failure, the data is copied from the high performance DRAM cache of the controller to the NAND flash memory while the super capacitor provides enough energy to support this process and power the controller for approximately 60 seconds. Unlike a BBU, the data is protected for years when copied to the flash memory.

Intelligent Power Management

Intelligent Power Management (IPM) slashes power and cooling costs by up to 70% using intelligent I/O caching combined with disk drive power savings via standby and power-off modes.

One-view Storage Management

The Series 6 family operates under Adaptec Storage Manager™, a one-view tool that centralizes management of all Adaptec RAID products.

Broad Operating System Support

The Series 6 family supports all major operating systems, including Windows, Linux, VMware and FreeBSD.

Compatibility, Reliability, and Support

The Series 6 family has been extensively tested with third-party components to deliver the utmost in compatibility. The cards are backed by a 3-year warranty and the company's legendary technical support.

Product Highlights

- 6Gb/s throughput at each port
- PMC-Sierra PM8013 Dual Core RAID on Chip (ROC)
- SAS 2.0 interfaces and PCIe Gen 2 Host Connection
- 4- and 8-port low-profile MD2
- Supports up to 256 SATA or SAS devices
- Enclosure management support via LED header and SES2/ SGPIO
- Intelligent Power Management
  - Reduces power and cooling costs by as much as 70%
- Adaptec Flash Module 600 (AFM-600) for Zero-Maintenance Cache Protection with 4GB NAND flash (optional kit):
  - No data loss from power failures: Replaces lithium ion batteries
  - Low Operating Costs: No installation, monitoring, maintenance, disposal or replacement costs due to batteries
  - Maintenance-free cached data protection
  - Instant RAID cache protection
  - Environmentally conscious
  - No toxic battery disposal
  - Simplified IATA compliance
- Hybrid RAID 1 & 10: SSD + HDD for Maximum Performance and Reliability

UNIFIED SERIAL ARCHITECTURE

Adaptec SATA & SAS RAID Family (6405, 6445, 6805)

Adaptec Unified Serial Controller Family	
Why to buy?	6Gb/s performance Unified Serial RAID controllers support both SATA and SAS devices and offer unique features including Zero Maintenance Cache Protection and Intelligent Power Management. Ideal for bandwidth intensive storage applications; NAS, online transaction processing servers (OLTP), web servers, digital surveillance and streaming applications.
Customer Needs	High I/O transaction and high bandwidth processing; solutions that reduce energy consumption and maintenance costs
Zero Maintenance Cache Protection	– Maximizes performance and extends power savings by protecting data in controller cache without incurring monitoring, replacement or disposal costs. – Support for full installation lifecycle – up to ten years – ensuring data availability and reducing total cost of ownership.
Intelligent Power Management	Automated customer-configurable feature that reduces disk drive energy use by up to 70% without compromising application performance. Two configurable modes supported: **Standby mode** – low-power mode; spins disks at lower RPMs (must be supported by disk drive). **Power-off mode –** Spin down drives when not in use.
RAID Features	– Supports up to 256 SATA or SAS devices using SAS expanders – RAID levels 0, 1, 1E, 5, 5EE, 6, 10, 50, 60 and JBOD – Hybrid RAID 1 & 10 – Quick initialization – Online Capacity Expansion – Copyback Hot Spare – Dynamic caching algorithm – Native Command Queuing (NCQ) – Background initialization – Hot-plug drive support – RAID Level Migration – Hot spares - global, dedicated, and pooled – Automatic/manual rebuild of hot spares – SES and SAF-TE enclosure management – Configurable stripe size – S.M.A.R.T. support – Multiple arrays per disk drive – Dynamic sector repair – Staggered drive spin-up – Bootable array support – Optimized Disk Utilization
Management Utilities	**Adaptec Storage Manager™ (ASM)** – Java-based GUI Management Utility – Remote configuration, monitoring and notification – ASM OS Support: Windows, Linux, SCO, Solaris, FreeBSD – Microsoft VDS Support – SNMP, SMTP – Remote firmware updates **ARCCONF** – Command Line Interface **Adaptec BIOS Configuration Utility (ACU)** – BIOS level configuration utility – Flashable BIOS support
Operating System	Windows 7, Windows Server 2008/2008 R2, Windows Server 2003/2003 R2, Windows Vista, VMware ESX Classic 4.x (vSphere), Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Server (SLES), Sun Solaris 10 x86, FreeBSD, Debian Linux, Ubuntu Linux. The latest drivers are available at www.adaptec.com/support.
Physical Dimensions	2.536"H x 6.6"L (64mm x 168mm)
Operating Temperature	0°C to 55°C (with 200 LFM airflow)
Operating Voltage	0.17A @ 3.3V; 1.25A @ 12V measured on PCIe Gen2 systems with 6G drives.
Regulatory Certification	CE, FCC, UL, C-tick, VCCI, KCC
Environmental Compliance	RoHS, REACH, WEEE
MTBF	6405 is 889,115 hours / 6445 is 862,728 hours / 6805 is 860,953 hours all at 40°C
Warranty	3 years
Accessories	Adaptec Flash Module 600 (2269700-R)

Adaptec RAID	6405	6445	6805
Order Part Number	2271100-R (kit) 2270000-R (single)	2270200-R (single)	2271200-R (kit) 2270100-R (single)
Form Factor	MD2 - Low Profile	MD2 - Low Profile	MD2 - Low Profile
Ports	4 internal	8 (4 int / 4 ext)	8 internal
Connectors	1 SFF-8087 (int.)	1 SFF-8087 (int.) / 1 SFF-8088 (ext.)	2 SFF-8087
Bus Interface	8-Lane PCIe Gen2	8-Lane PCIe Gen2	8-Lane PCIe Gen2
Processor	PM8013	PM8013	PM8013
Cache	512MB	512MB	512MB
Fanout Cable (Kit only)	mSASx4 to 4xSATA w/sideband (0.7M)x1	None	mSASx4 to 4xSATA w/sideband (0.7M)x2

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