

# Adaptec 3Gb/s SATA & SAS RAID Family with Intelligent Power Management & Zero-Maintenance Cache Protection (5405Z, 5445Z, 5805Z)



## Unified Serial® (SATA/SAS) RAID Controllers Deliver Maximum Performance, Energy Efficiency and Operating Cost Savings

Built upon our industry-leading Series 5 RAID controllers, Series 5Z cards feature a dual core RAID on Chip (ROC), DDR2 533MHz write cache, and an x8 PCI Express 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 5Z controllers deliver speeds up to five times faster than competing products — over 250,000 IOPs and 1.2GB/s — making them ideal for enterprise-class storage systems.

### 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, Online Capacity Expansion, and Copyback Hot Spare.

### Hybrid RAID

With Hybrid RAID 1 & 10 the Series 5Z 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. 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. Adaptec Series 5Z controllers with Zero-Maintenance Cache Protection provide full protection to cached data with no installation, monitoring, maintenance, disposal, or replacement costs.

Featuring 4GB of NAND flash memory with super capacitor technology, Series 5Z controllers instantly save cache contents in the event of system power loss. The super capacitor charges instantly while the system is booting, cache protection is available within minutes of installation, and stored data is preserved for up to 10 years. And, since it is flash-based, systems don't need to be shut down for battery replacement.

### 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

Adaptec Storage Manager™, a one-view tool centralizes management of all Adaptec RAID products.

### Broad Operating System Support

The Series 5Z family supports all major operating systems, including Windows, Linux, VMware and FreeBSD.

### Compatibility, Reliability, and Support

The Series 5Z family has been extensively tested with more than 300 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

- 3Gb/s throughput at each port
- 1.2GHz Dual Core RAID on Chip (ROC)
  - High-performance RAID 5/6
- 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 Zero-Maintenance Cache Protection with 4GB NAND flash:
  - 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



## Adaptec SATA & SAS RAID Family (5405Z, 5445Z, 5805Z)

Adaptec Unified Serial Controller Family	
<b>Why to buy?</b>	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.
<b>Customer Needs</b>	High I/O transaction and high bandwidth processing; solutions that reduce energy consumption and maintenance costs
<b>Zero Maintenance Cache Protection</b>	<ul style="list-style-type: none"> <li>Maximizes performance and extends power savings by protecting data in controller cache without incurring monitoring, replacement or disposal costs.</li> <li>Support for full installation lifecycle - up to ten years - ensuring data availability and reducing total cost of ownership.</li> </ul>
<b>Intelligent Power Management</b>	Automated customer-configurable feature that reduces disk drive energy use by up to 70% without compromising application performance. Two configurable modes supported: <b>Standby mode</b> - low-power mode; spins disks at lower RPMs (must be supported by disk drive). <b>Power-off mode</b> - Spin down drives when not in use.
<b>RAID Features</b>	<ul style="list-style-type: none"> <li>Supports up to 256 SATA or SAS devices using SAS expanders</li> <li>RAID levels 0, 1, 1E, 5, 5EE, 6, 10, 50, 60 and JBOD</li> <li>Quick initialization</li> <li>Online Capacity Expansion</li> <li>Copyback Hot Spare</li> <li>Dynamic caching algorithm</li> <li>Native Command Queuing (NCQ)</li> <li>Background initialization</li> <li>Hot-plug drive support</li> <li>RAID Level Migration</li> <li>Hot spares - global, dedicated, and pooled</li> <li>Automatic/manual rebuild of hot spares</li> <li>SES and SAF-TE enclosure management</li> <li>Configurable stripe size</li> <li>S.M.A.R.T. support</li> <li>Multiple arrays per disk drive</li> <li>Dynamic sector repair</li> <li>Staggered drive spin-up</li> <li>Bootable array support</li> <li>Optimized Disk Utilization</li> </ul>
<b>Management Utilities</b>	<b>Adaptec Storage Manager™ (ASM)</b> <ul style="list-style-type: none"> <li>Java-based GUI Management Utility</li> <li>Remote configuration, monitoring and notification</li> <li>ASM OS Support: Windows, Linux, SCO, Solaris, FreeBSD</li> <li>Microsoft VDS Support</li> <li>SNMP, SMTP</li> <li>Remote firmware updates</li> </ul> <b>ARCCONF</b> <ul style="list-style-type: none"> <li>Command Line Interface</li> </ul> <b>Adaptec BIOS Configuration Utility (ACU)</b> <ul style="list-style-type: none"> <li>BIOS level configuration utility</li> <li>Flashable BIOS support</li> </ul>
<b>Operating System</b>	Windows 7, Windows XP, Server 2003/2008, Vista, VMware ESX 3.x, ESXi 3.x and vSphere 4, Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Server (SLES), SCO OpenServer, UnixWare, Sun Solaris 10 x86, FreeBSD. The latest drivers are available at <a href="http://www.adaptec.com/support">www.adaptec.com/support</a> .
<b>Physical Dimensions</b>	5405Z/5445Z/5805Z – 2.5”H x 6.6”L (64mm x 167mm)
<b>Operating Temperature*</b>	0°C to 55°C (with 200 LFM airflow)
<b>Operating Voltage</b>	0.40A @ 3.3V; 1.2A @ 12V
<b>Regulatory Certification</b>	CE, FCC, UL, C-tick, VCCI
<b>Environmental Compliance</b>	RoHS, REACH
<b>MTBF</b>	873,402 hours at 40°C
<b>Warranty</b>	3 years

\*Note: This Adaptec card contains a powerful RAID processor which requires adequate airflow to operate reliably. Please install this card only into server or PC chassis with recommended airflow (200 LFM). Ambient temperature measured 1” away from the RAID processor.

Adaptec RAID	5405Z	5805Z	5445Z
<b>Order Part Number</b>	2266800-R (single)	2266900-R (single)	2267000-R (single)
<b>Form Factor</b>	MD2 - Low Profile	MD2 - Low Profile	MD2 - Low Profile
<b>Ports</b>	4 internal	8 internal	8 (4 int / 4 ext)
<b>Connectors</b>	1 SFF-8087 (int.)	2 SFF-8087	1 SFF-8087 (int.) / 1 SFF-8088 (ext.)
<b>Bus Interface</b>	8-Lane PCIe Gen1.1	8-Lane PCIe Gen1.1	8-Lane PCIe Gen1.1
<b>Processor</b>	1.2 GHz Dual Core	1.2 GHz Dual Core	1.2 GHz Dual Core
<b>Cache</b>	512MB	512MB	512MB



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