

# Adaptec 6Gb/s SATA & SAS RAID

## True Hardware RAID Controllers with On-Board DRAM for Entry-Level Markets (6405E, 6805E)



### Entry-Level Unified Serial® (SATA/SAS) 6Gb/s RAID Controllers Deliver Affordable True Hardware RAID that Outperforms Software-Based HBAs and SATA Controllers

Adaptec Series 6E Unified Serial SATA/SAS RAID controllers deliver the robustness of hardware RAID and the Adaptec RAID Code, enterprise class management features, and full OS support – including open source drivers for Linux and FreeBSD – into the entry-level RAID space.

Entry-level RAID controllers typically have several drawbacks. Either RAID is implemented in software only, which limits its robustness, or it comes without the support for DRAM caching, which limits performance. Many integrated solutions do not offer full OS support, and some require closed source libraries on certain open source OS platforms. Management and trouble-shooting capabilities are often restricted and require special training, qualification and support.

Adaptec Series 6E Unified Serial SATA/SAS RAID controllers have none of these inadequacies. They feature hardware RAID and run the same “Adaptec RAID Code” (ARC) as Adaptec Series 6 RAID controllers. They also come with the same drivers, BIOS and storage management tools as Series 6 controllers and do not require additional training or qualification. Series 6E controllers support SATA and SAS devices, and have been qualified with the same systems, motherboards, backplanes and drives as Series 6 controllers. Series 6E controllers have also been thoroughly tested with entry-level storage devices for desktop use and the entry-level server platforms, workstations and motherboards most typically used for basic servers, performance workstations or industrial PCs.

Adaptec Series 6E controllers deliver the same 6Gb/s performance of our Series 6 controllers, but are optimized for platforms where a Series 6 controller would not fit in from a price, form factor or host connectivity standpoint. The 6405E offers maximum connectivity through a x1 PCI Express 2.0 interface that fits into any industrial PC, workstation class or entry server class motherboard, while the 6805E has a x4 PCI Express 2.0 interface for application that require more bandwidth.

#### I/O Connectivity and Data Protection

With its entry-level price point, Adaptec Series 6E can be used as a connectivity product, with support for up to 4 (6405E) or 8 (6805E) SATA & SAS devices, and 128MB of DDR2-800 MHz DRAM cache for device acceleration. At the same time, the Adaptec RAID Code (ARC) delivers maximum reliability with RAID levels 0, 1, 1E, 10 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 Series 6E controllers offer maximum performance and reliability by combining Solid State Drives (SSDs) and Hard Disk Drives (HDDs) in a single array. Performing read operations from the faster SSD and write operations on both the SSDs and HDD results in 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.

#### 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

Series 6E controllers operate under Adaptec Storage Manager™, a one-view tool that centralizes management of all Adaptec RAID products.

#### Broad Operating System Support

Series 6E controllers support all major operating systems, including Windows 7, Windows Server 2008/2008 R2, Windows Vista, VMware ESX Classic 4.x, Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Server (SLES), Sun Solaris 10, FreeBSD, Debian Linux, Ubuntu Linux.

#### Compatibility, Reliability, and Support

The Series 6E 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

- 6 Gb/s throughput at each port
- PMC-Sierra PM8013 Dual Core RAID on Chip (ROC)
- SAS 2.0 interfaces and PCIe Gen 2 Host Connection
- 128MB On-Board DRAM for maximum performance
- 6405E:** supports up to 4 SATA or SAS devices
  - PCIe x1 interface
  - Low-profile form factor (2.535”H x 5.115” L) smaller than MD2 allows installation in condensed system designs
- 6805E:** supports up to 8 SATA or SAS devices
  - PCIe x4 interface
  - Low-profile form factor (2.535”H x 6.095”L) smaller than MD2 allows installation in condensed system designs
- Enclosure management support via LED header and SES2/SGPIO
- Intelligent Power Management
  - Reduces power and cooling costs by as much as 70%
- Hybrid RAID 1 & 10: SSD + HDD for Maximum Performance and Reliability



## Adaptec SATA & SAS RAID (6405E, 6805E)

Adaptec Unified Serial Controller Family	
<b>Why to buy?</b>	Entry-level 6Gb/s performance Unified Serial RAID controllers support both SATA and SAS devices and provide affordable, true hardware RAID with on-board DRAM cache that outperforms software-based HBAs and SATA controllers.
<b>Customer Needs</b>	High I/O transaction and high bandwidth processing; solutions that reduce energy consumption and maintenance costs
<b>Hybrid RAID</b>	<ul style="list-style-type: none"> <li>Maximizes performance and reliability with arrays of Solid State Drives (SSDs) and Hard Disk Drives (HDDs).</li> <li>Controller automatically creates RAID 1 or RAID 10 arrays.</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 4 (6405E) or 8 (6805E) SATA or SAS devices</li> <li>RAID levels 0, 1, 10, 1E and JBOD</li> <li>Hybrid RAID 1 &amp; 10</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 Server 2008/2008 R2, Windows Vista, VMware ESX Classic 4.x, Red Hat Enterprise Linux (RHEL), SUSE Linux Enterprise Server (SLES), Sun Solaris 10, FreeBSD, Debian Linux, Ubuntu Linux.
<b>Physical Dimensions</b>	6405E: 2.535"H x 5.115"L 6805E: 2.535"H x 6.095"L
<b>Operating Temperature</b>	0°C to 55°C (with 200 LFM airflow)
<b>Operating Voltage</b>	6405E: 0.11A @ 3.3 VDC; 0.75A @ 12.0 VDC 6805E: 0.125A @ 3.3 VDC; 0.80A @ 12.0 VDC
<b>Regulatory Certification</b>	CE, FCC, UL, C-tick, VCCI, KCC
<b>Environmental Compliance</b>	RoHS, REACH, WEEE
<b>MTBF</b>	6405E: 889,115 hours at 40°C 6805E: 860,953 hours at 40°C
<b>Warranty</b>	3 years

Adaptec RAID	6405E	6805E
<b>Order Part Number</b>	2271700-R (kit) 2270800-R (single)	2271800-R (kit) 2270900-R (single)
<b>Form Factor</b>	MD2 - Low Profile (2.535"H x 5.115"L)	MD2 - Low Profile (2.535"H x 6.095"L)
<b>Ports</b>	4 internal	8 internal
<b>Connectors</b>	1 SFF-8087	2 SFF-8087
<b>Bus Interface</b>	1-Lane PCIe Gen2	4-Lane PCIe Gen2
<b>Processor</b>	PM8013	PM8013
<b>Cache</b>	128MB	128MB
<b>Fanout Cable (Kit only)</b>	mSASx4 to 4xSATA w/sideband (0.7M)x1	mSASx4 to 4xSATA w/sideband (0.7M)x2



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